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**Return of Private Foundation
or Section 4947(a)(1) Nonexempt Charitable Trust
Treated as a Private Foundation**

2011

Department of the Treasury
Internal Revenue Service

Note. The foundation may be able to use a copy of this return to satisfy state reporting requirements.

For calendar year 2011, or tax year beginning _____, **2011, and ending** _____, **20**

Name of foundation FUSION POWER ASSOCIATES		A Employer identification number 52-1162794
Number and street (or P.O. box number if mail is not delivered to street address) 2 PROFESSIONAL DRIVE	Room/suite	B Telephone number (see instructions) (301) 258-0545
City or town, state, and ZIP code GAITHERSBURG MD 20879		C If exempt application is pending, check here <input type="checkbox"/>
G Check all that apply	<input type="checkbox"/> Initial return <input type="checkbox"/> Final return <input type="checkbox"/> Address change	<input type="checkbox"/> Initial return of a former public charity <input type="checkbox"/> Amended return <input type="checkbox"/> Name change
H Check type of organization		D 1. Foreign organizations, check here <input type="checkbox"/> 2. Foreign organizations meeting the 85% test, check here and attach computation <input type="checkbox"/>
<input checked="" type="checkbox"/> Section 501(c)(3) exempt private foundation <input type="checkbox"/> Section 4947(a)(1) nonexempt charitable trust <input type="checkbox"/> Other taxable private foundation		E If private foundation status was terminated under section 507(b)(1)(A), check here <input type="checkbox"/>
I Fair market value of all assets at end of year (from Part II, col. (c), line 16) \$ 445,616	J Accounting method: <input type="checkbox"/> Cash <input checked="" type="checkbox"/> Accrual <input type="checkbox"/> Other (specify) _____ (Part I, column (d) must be on cash basis.)	
F If the foundation is in a 60-month termination under section 507(b)(1)(B), check here <input type="checkbox"/>		

	(a) Revenue and expenses per books	(b) Net investment income	(c) Adjusted net income	(d) Disbursements for charitable purposes (cash basis only)
Part I Analysis of Revenue and Expenses (The total of amounts in columns (b), (c), & (d) may not necessarily equal the amounts in column (a) (see instructions).)				
REVENUE				
1 Contributions, gifts, grants, etc., received (attach schedule)	14,745			
2 Check <input type="checkbox"/> if the foundation is not required to attach Sch B				
3 Interest on savings and temp. cash investments	65	65	65	
4 Dividends and interest from securities	1,172	1,172	1,172	
5 a Gross rents				
b Net rental income (or loss)				
6 a Net gain/(loss) from sale of assets not on line 10				
b Gross sales price for all assets on line 6a				
7 Capital gain net income (from Part II, line 2)		0		
8 Net short-term capital gain			0	
9 Income modifications			0	
10 a Gross sales less returns & allowances				
b Less Cost of goods sold				
c Gross profit or (loss) (attach schedule)				
11 Other income (attach schedule) #1	107,696	1,738	1,738	
12 Total. Add lines 1 through 11	123,678	2,975	2,975	
OPERATING & ADMINISTRATIVE EXPENSES				
13 Compensation of officers, directors, trustees, etc.	63,850	2,074	2,074	61,776
14 Other employee salaries and wages				
15 Pension plans, employee benefits				
16 a Legal fees (attach schedule) #2	145	145	145	
b Accounting fees (attach schedule) #3	950	90	90	860
c Other professional fees (attach schedule)				
17 Interest				
18 Taxes (attach schedule) (see instructions) #4	5,556	353	353	5,203
19 Depreciation (attach sch.) and depletion	2,580			
20 Occupancy	6,986	489	489	6,497
21 Travel, conferences, and meetings	22,635			22,635
22 Printing and publications	443			443
23 Other expenses (attach schedule) #5	21,399	70	70	18,329
24 Total operating and administrative expenses. Add lines 13 through 23	124,544	3,221	3,221	115,743
25 Contributions, gifts, grants paid				
26 Total exp & disbursements. Add lines 24 and 25	124,544	3,221	3,221	115,743
27 Subtract line 26 from line 12				
a Excess of revenue over expenses and disbursements	-866			
b Net investment income (+ if neg., enter -0-)				
c Adjusted net income (if neg., enter -0-)				

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Part II Balance Sheets		Attached schedules and amounts in the description column should be for end-of-year amounts only (See inst.)			
		Beginning of year (a) Book Value	End of year (b) Book Value (c) Fair Market Value		
ASSETS	1	Cash -- non-interest-bearing	45,303	43,257	43,257
	2	Savings and temporary cash investments	95,984	93,959	93,959
	3	Accounts receivable 8,400			
		Less: allowance for doubtful accts. ▶	9,930	8,400	8,400
	4	Pledges receivable ▶			
		Less: allowance for doubtful accts. ▶			
	5	Grants receivable			
	6	Receivables due from officers, directors, trustees, and other disqualified persons (attach schedule) (see the instructions) . .			
	7	Other notes and loans receivable (attach schedule) ▶			
		Less allowance for doubtful accounts ▶			
	8	Inventories for sale or use			
	9	Prepaid expenses and deferred charges			
	10a	Investments -- U S and state govt obligations (attach schedule)			
	b	Investments -- corporate stock (attach schedule)			
	c	Investments -- corporate bonds (attach schedule)			
	11	Investments -- land, buildings, and equipment basis ▶			
	Less accumulated depreciation (attach schedule) ▶				
12	Investments -- mortgage loans				
13	Investments -- other (attach schedule)				
14	Land, buildings, and equipment basis ▶ 170,374	#6			
	Less accumulated depreciation (attach schedule) ▶ 104,541	68,413	65,833	300,000	
15	Other assets (describe ▶)				
16	Total assets (to be completed by all filers -- see the instructions. Also, see page 1, item I)	219,630	211,449	445,616	
LIABILITIES	17	Accounts payable and accrued expenses	1,947	1,204	
	18	Grants payable			
	19	Deferred revenue	81,145	74,573	
	20	Loans from officers, directors, trustees, and other disqualified persons			
	21	Mortgages and other notes payable (attach schedule)			
	22	Other liabilities (describe ▶)			
	23	Total liabilities (add lines 17 through 22)	83,092	75,777	
FUND ASSETS	Foundations that follow SFAS 117, check here ▶ <input checked="" type="checkbox"/> and complete lines 24 through 26 and lines 30 and 31.				
	24	Unrestricted	136,538	135,672	
	25	Temporarily restricted			
	26	Permanently restricted			
	Foundations that do not follow SFAS 117, ck. here ▶ <input type="checkbox"/> and complete lines 27 through 31.				
	27	Capital stock, trust principal, or current funds			
	28	Paid-in or capital surplus, or land, bldg., and equipment fund			
	29	Retained earnings, accumulated income, endowment, or other funds	136,538	135,672	
	30	Total net assets or fund balances (see the instructions)	136,538	135,672	
31	Total liabilities and net assets/fund balances (see the inst.)	219,630	211,449		

Part III Analysis of Changes in Net Assets or Fund Balances		
1	Total net assets or fund balances at beginning of year -- Part II, column (a), line 30 (must agree with end-of-year figure reported on prior year's return)	136,538
2	Enter amount from Part I, line 27a	-866
3	Other increases not included in line 2 (itemize) ▶	
4	Add lines 1, 2, and 3	135,672
5	Decreases not included in line 2 (itemize) ▶	
6	Total net assets or fund balances at end of year (line 4 minus line 5) -- Part II, column (b), line 30	135,672

Part IV Capital Gains and Losses for Tax on Investment Income

(a) List and describe the kind(s) of property sold (e.g., real estate, 2-story brick warehouse; or common stock, 200 shs. MLC Co.)		(b) How acquired P -- Purchase D -- Donation	(c) Date acquired (mo., day, yr.)	(d) Date sold (mo., day, yr.)
1a				
b				
c				
d				
e				
(e) Gross sales price	(f) Depreciation allowed (or allowable)	(g) Cost or other basis plus expense of sale	(h) Gain or (loss) (e) plus (f) minus (g)	
a				
b				
c				
d				
e				
Complete only for assets showing gain in column (h) and owned by the foundation on 12/31/69			(l) Gains (Col. (h) gain minus col. (k), but not less than -0-) or Losses (from col. (h))	
(i) F.M.V. as of 12/31/69	(j) Adjusted basis as of 12/31/69	(k) Excess of col. (i) over col. (j), if any		
a				
b				
c				
d				
e				
2 Capital gain net income or (net capital loss)	[If gain, also enter in Part I, line 7 If (loss), enter -0- in Part I, line 7] > ...		2	0
3 Net short-term capital gain or (loss) as defined in sections 1222(5) and (6). If gain, also enter in Part I, line 8, column (c) (see the instructions) If (loss), enter -0- in Part I, line 8	[.....] > ...		3	0

Part V Qualification Under Section 4940(e) for Reduced Tax on Net Investment Income

(For optional use by domestic private foundations subject to the section 4940(a) tax on net investment income.)

If section 4940(d)(2) applies, leave this part blank.

Was the foundation liable for the section 4942 tax on the distributable amount of any year in the base period? Yes No
 If "Yes," the foundation does not qualify under section 4940(e). Do not complete this part.

1 Enter the appropriate amount in each column for each year, see the instructions before making any entries

(a) Base period years Calendar year (or tax year beg. in)	(b) Adjusted qualifying distributions	(c) Net value of noncharitable-use assets	(d) Distribution ratio (col (b) divided by col. (c))
2010			
2009			
2008			
2007			
2006			
2 Total of line 1, column (d)			2 0.000000
3 Average distribution ratio for the 5-year base period -- divide the total on line 2 by 5, or by the number of years the foundation has been in existence if less than 5 years			3 0.000000
4 Enter the net value of noncharitable-use assets for 2011 from Part X, line 5			4 440,937
5 Multiply line 4 by line 3			5
6 Enter 1% of net investment income (1% of Part I, line 27b)			6
7 Add lines 5 and 6			7
8 Enter qualifying distributions from Part XII, line 4			8 115,743

If line 8 is equal to or greater than line 7, check the box in Part VI, line 1b, and complete that part using a 1% tax rate. See the Part VI instructions

Part VI Excise Tax Based on Investment Income (Section 4940(a), 4940(b), 4940(e), or 4948 -- see the instructions)

1 a	Exempt operating foundations described in section 4940(d)(2), check here <input type="checkbox"/> and enter "N/A" on line 1. Date of ruling or determination letter _____ (attach copy of letter if necessary -- see Inst.)		
b	Domestic foundations that meet the section 4940(e) requirements in Part V, check here <input checked="" type="checkbox"/> and enter 1% of Part I, line 27b	1	
c	All other domestic foundations enter 2% of line 27b. Exempt foreign organizations enter 4% of Part I, line 12, col. (b).		
2	Tax under section 511 (domestic section 4947(a)(1) trusts and taxable foundations only. Others enter -0-)	2	0
3	Add lines 1 and 2	3	
4	Subtitle A (income) tax (domestic section 4947(a)(1) trusts and taxable foundations only. Others enter -0-)	4	0
5	Tax based on investment income. Subtract line 4 from line 3. If zero or less, enter -0-	5	0
6	Credits/Payments		
a	2011 estimated tax payments and 2010 overpayment credited to 2011	6a	
b	Exempt foreign organizations -- tax withheld at source	6b	
c	Tax paid with application for extension of time to file (Form 8868)	6c	
d	Backup withholding erroneously withheld	6d	
7	Total credits and payments. Add lines 6a through 6d	7	0
8	Enter any penalty for underpayment of estimated tax. Check here <input type="checkbox"/> if Form 2220 is attached	8	
9	Tax due. If the total of lines 5 and 8 is more than line 7, enter amount owed	9	
10	Overpayment. If line 7 is more than the total of lines 5 and 8, enter the amount overpaid	10	
11	Enter the amount of line 10 to be Credited to 2012 estimated tax Refunded	11	

Part VII-A Statements Regarding Activities

	Yes	No
1 a		X
b		X
c		X
d		
e		
2		X
3		X
4 a		X
4 b	N/A	
5		X
6	X	
7	X	
8 a		
8 b	X	
9	X	
10		X

Part VII-A Statements Regarding Activities (continued)

11	At any time during the year, did the foundation, directly or indirectly, own a controlled entity within the meaning of section 512(b)(13)? If "Yes," attach schedule (see instructions)	11		X
12	Did the foundation make a distribution to a donor advised fund over which the foundation or a disqualified person had advisory privileges? If "Yes," attach statement (see instructions)	12		X
13	Did the foundation comply with the public inspection requirements for its annual returns and exemption application? Website address ▶ <u>HTTP://FUSIONPOWER.ORG</u>	13	X	
14	The books are in care of ▶ <u>SEE ATTACHMENT #7</u> Telephone no. ▶ _____ Located at ▶ _____ ZIP+4 ▶ _____			
15	Section 4947(a)(1) nonexempt charitable trusts filing Form 990-PF in lieu of Form 1041-- Check here ▶ <input type="checkbox"/> and enter the amount of tax-exempt interest received or accrued during the year. ▶ <u>15</u>			
16	At any time during calendar year 2011, did the foundation have an interest in or a signature or other authority over a bank, securities, or other financial account in a foreign country? See the instructions for exceptions and filing requirements for Form TD F 90-22.1. If "Yes," enter the name of the foreign country ▶ _____	16	Yes	No X

Part VII-B Statements Regarding Activities for Which Form 4720 May Be Required

File Form 4720 if any item is checked in the "Yes" column, unless an exception applies.

	Yes	No
1a During the year did the foundation (either directly or indirectly):		
(1) Engage in the sale or exchange, or leasing of property with a disqualified person? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
(2) Borrow money from, lend money to, or otherwise extend credit to (or accept it from) a disqualified person? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
(3) Furnish goods, services, or facilities to (or accept them from) a disqualified person? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
(4) Pay compensation to, or pay or reimburse the expenses of, a disqualified person? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
(5) Transfer any income or assets to a disqualified person (or make any of either available for the benefit or use of a disqualified person)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
(6) Agree to pay money or property to a government official? (Exception: Check "No" if the foundation agreed to make a grant to or to employ the official for a period after termination of government service, if terminating within 90 days.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
b If any answer is "Yes" to 1a(1)-(6), did any of the acts fail to qualify under the exceptions described in Regulations section 53.4941(d)-3 or in a current notice regarding disaster assistance (see instructions)? <input type="checkbox"/> Organizations relying on a current notice regarding disaster assistance check here ▶ <input type="checkbox"/>	1b	X
c Did the foundation engage in a prior year in any of the acts described in 1a, other than excepted acts, that were not corrected before the first day of the tax year beginning in 2011?	1c	X
2 Taxes on failure to distribute income (section 4942) (does not apply for years the foundation was a private operating foundation defined in section 4942(j)(3) or 4942(j)(5))		
a At the end of tax year 2011, did the foundation have any undistributed income (lines 6d and 6e, Part XIII) for tax year(s) beginning before 2011? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If "Yes," list the years ▶ <u>2009, 2008, 2007, 2006</u>		
b Are there any years listed in 2a for which the foundation is not applying the provisions of section 4942(a)(2) (relating to incorrect valuation of assets) to the year's undistributed income? (If applying section 4942(a)(2) to all years listed, answer "No" and attach statement -- see instructions.)	2b	X
c If the provisions of section 4942(a)(2) are being applied to any of the years listed in 2a, list the years here ▶ <u>20__ , 20__ , 20__ , 20__</u>		
3a Did the foundation hold more than a 2% direct or indirect interest in any business enterprise at any time during the year? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
b If "Yes," did it have excess business holdings in 2011 as a result of (1) any purchase by the foundation or disqualified persons after May 26, 1969; (2) the lapse of the 5-year period (or longer period approved by the Commissioner under section 4943(c)(7)) to dispose of holdings acquired by gift or bequest, or (3) the lapse of the 10-, 15-, or 20-year first phase holding period? (Use Schedule C, Form 4720, to determine if the foundation had excess business holdings in 2011)	3b	X
4a Did the foundation invest during the year any amount in a manner that would jeopardize its charitable purposes?	4a	X
b Did the foundation make any investment in a prior year (but after December 31, 1969) that could jeopardize its charitable purpose that had not been removed from jeopardy before the first day of the tax year beginning in 2011?	4b	X

Part VII-B Statements Regarding Activities for Which Form 4720 May Be Required (continued)

5a During the year did the foundation pay or incur any amount to:

(1) Carry on propaganda, or otherwise attempt to influence legislation (section 4945(e))? Yes No

(2) Influence the outcome of any specific public election (see section 4955); or to carry on, directly or indirectly, any voter registration drive? Yes No

(3) Provide a grant to an individual for travel, study, or other similar purposes? Yes No

(4) Provide a grant to an organization other than a charitable, etc., organization described in section 509(a)(1), (2), or (3), or section 4940(d)(2)? (see instructions) Yes No

(5) Provide for any purpose other than religious, charitable, scientific, literary, or educational purposes, or for the prevention of cruelty to children or animals? Yes No

b If any answer is "Yes" to 5a(1)-(5), did any of the transactions fail to qualify under the exceptions described in Regulations section 53.4945 or in a current notice regarding disaster assistance (see instructions)? Yes No

Organizations relying on a current notice regarding disaster assistance check here

c If the answer is "Yes" to question 5a(4), does the foundation claim exemption from the tax because it maintained expenditure responsibility for the grant? Yes No

If "Yes," attach the statement required by Regulations section 53.4945-5(d)

6a Did the foundation, during the year, receive any funds, directly or indirectly, to pay premiums on a personal benefit contract? Yes No

b Did the foundation, during the year, pay premiums, directly or indirectly, on a personal benefit contract? Yes No

If "Yes" to 6b, file Form 8870.

7a At any time during the tax year, was the foundation a party to a prohibited tax shelter transaction? Yes No

b If "Yes," did the foundation receive any proceeds or have any net income attributable to the transaction? Yes No

Part VIII Information About Officers, Directors, Trustees, Foundation Managers, Highly Paid Employees, and Contractors

1 List all officers, directors, trustees, foundation managers and their compensation (see instructions).

(a) Name and address	(b) Title, and avg hours per week devoted to position	(c) Compensation (if not paid, enter -0-)	(d) Contributions to employee benefit plans and deferred comp	(e) Expense account, other allowances
SEE ATTACHMENT #8				

2 Compensation of five highest-paid employees (other than those included on line 1 -- see instructions). If none, enter "NONE."

(a) Name and address of each employee paid more than \$50,000	(b) Title, and avg. hours per week devoted to position	(c) Compensation	(d) Contributions to employee benefit plans and deferred compensation	(e) Expense account, other allowances
NONE				

Total number of other employees paid over \$50,000 0

Part VIII Information About Officers, Directors, Trustees, Foundation Managers, Highly Paid Employees, and Contractors (continued)

3 Five highest-paid independent contractors for professional services (see the instructions). If none, enter "NONE."

(a) Name and address of each person paid more than \$50,000	(b) Type of service	(c) Compensation
SEE ATTACHMENT #9		

Total number of others receiving over \$50,000 for professional services ▶

Part IX-A Summary of Direct Charitable Activities

List the foundation's four largest direct charitable activities during the tax year. Include relevant statistical information such as the number of organizations and other beneficiaries served, conferences convened, research papers produced, etc	Expenses
1 SEE ATTACHMENT #10	
2 SEE ATTACHMENT #11	14,063
3 SEE ATTACHMENT #12	22,635
4	50,478

Part IX-B Summary of Program-Related Investments (see the instructions)

Describe the two largest program-related investments made by the foundation during the tax year on lines 1 and 2.	Amount
1	
2	
All other program-related investments. See the instructions.	
3	
Total. Add lines 1 through 3 ▶	

Part X Minimum Investment Return (All domestic foundations must complete this part. Foreign foundations, see the instructions.)

1	Fair market value of assets not used (or held for use) directly in carrying out charitable, etc., purposes:		
a	Average monthly fair market value of securities	1a	94,972
b	Average of monthly cash balances	1b	44,280
c	Fair market value of all other assets (see the instructions)	1c	308,400
d	Total (add lines 1a, b, and c)	1d	447,652
e	Reduction claimed for blockage or other factors reported on lines 1a and 1c (attach detailed explanation)	1e	
2	Acquisition indebtedness applicable to line 1 assets	2	
3	Subtract line 2 from line 1d	3	447,652
4	Cash deemed held for charitable activities. Enter 1 1/2 % of line 3 (for greater amount, see the instructions)	4	6,715
5	Net value of noncharitable-use assets. Subtract line 4 from line 3. Enter here and on Part V, line 4.	5	440,937
6	Minimum investment return. Enter 5% of line 5	6	22,047

Part XI Distributable Amount (see the instructions) (Section 4942(j)(3) and (j)(5) private operating foundations and certain foreign organizations check here and do not complete this part.)

1	Minimum investment return from Part X, line 6	1	22,047
2a	Tax on investment income for 2011 from Part VI, line 5	2a	
b	Income tax for 2011. (This does not include the tax from Part VI.)	2b	
c	Add lines 2a and 2b	2c	
3	Distributable amount before adjustments. Subtract line 2c from line 1	3	22,047
4	Recoveries of amounts treated as qualifying distributions	4	
5	Add lines 3 and 4	5	22,047
6	Deduction from distributable amount (see the instructions)	6	
7	Distributable amount as adjusted. Subtract line 6 from line 5. Enter here and on Part XIII, line 1	7	22,047

Part XII Qualifying Distributions (see the instructions)

1	Amounts paid (including administrative expenses) to accomplish charitable, etc., purposes:		
a	Expenses, contributions, gifts, etc. -- total from Part I, column (d), line 26	1a	115,743
b	Program-related investments -- total from Part IX-B	1b	
2	Amounts paid to acquire assets used (or held for use) directly in carrying out charitable, etc., purposes	2	
3	Amounts set aside for specific charitable projects that satisfy the:		
a	Suitability test (prior IRS approval required)	3a	
b	Cash distribution test (attach the required schedule)	3b	
4	Qualifying distributions. Add lines 1a through 3b. Enter here and on Part V, line 8, and Part XIII, line 4	4	115,743
5	Foundations that qualify under section 4940(e) for the reduced rate of tax on net investment income. Enter 1% of Part I, line 27b (see the instructions)	5	0
6	Adjusted qualifying distributions. Subtract line 5 from line 4	6	115,743

Note. The amount on line 6 will be used in Part V, column (b), in subsequent years when calculating whether the foundation qualifies for the section 4940(e) reduction of tax in those years

Part XIII Undistributed Income (see the instructions)

	(a) Corpus	(b) Years prior to 2010	(c) 2010	(d) 2011
1 Distributable amount for 2011 from Part XI, line 7				22,047
2 Undistributed income, if any, as of the end of 2011				
a Enter amount for 2010 only				
b Total for prior years 20__, 20__, 20__				
3 Excess distributions carryover, if any, to 2011.				
a From 2006				
b From 2007				
c From 2008				
d From 2009				
e From 2010				
f Total of lines 3a through e	0			
4 Qualifying distributions for 2011 from Part XII, line 4 ▶ \$ 115,743				
a Applied to 2010, but not more than line 2a				
b Applied to undistributed income of prior years (Election required -- see the instructions)				
c Treated as distributions out of corpus (Election required -- see the instructions)				
d Applied to 2011 distributable amount				
e Remaining amount distributed out of corpus				
5 Excess distributions carryover applied to 2011 (If an amount appears in column (d), the same amount must be shown in column (a).)				
6 Enter the net total of each column as indicated below:				
a Corpus. Add lines 3f, 4c, and 4e. Subtract line 5				
b Prior years' undistributed income. Subtract line 4b from line 2b				
c Enter the amount of prior years' undistributed income for which a notice of deficiency has been issued, or on which the section 4942(a) tax has been previously assessed				
d Subtract line 6c from line 6b. Taxable amount -- see the instructions				
e Undistributed income for 2010. Subtract line 4a from line 2a. Taxable amount -- see the instructions				
f Undistributed income for 2011. Subtract lines 4d and 5 from line 1. This amount must be distributed in 2012				22,047
7 Amounts treated as distributions out of corpus to satisfy requirements imposed by section 170(b)(1)(F) or 4942(g)(3) (see the instructions)				
8 Excess distributions carryover from 2006 not applied on line 5 or line 7 (see the instructions)				
9 Excess distributions carryover to 2012. Subtract lines 7 and 8 from line 6a				
10 Analysis of line 9:				
a Excess from 2007				
b Excess from 2008				
c Excess from 2009				
d Excess from 2010				
e Excess from 2011				

Part XIV Private Operating Foundations (see instructions and Part VII-A, question 9)

1a If the foundation has received a ruling or determination letter that it is a private operating foundation, and the ruling is effective for 2011, enter the date of the ruling, ▶

b Check box to indicate whether the foundation is a private operating foundation described in section 4942(j)(3) or 4942(j)(5)

	Tax year				(e) Total
	(a) 2011	(b) 2010	(c) 2009	(d) 2008	
2a Enter the lesser of the adjusted net income from Part I or the minimum investment return from Part X for each year listed	2,975	3,074	1,875	3,704	11,628
b 85% of line 2a	2,529	2,613	1,594	3,148	9,884
c Qualifying distributions from Part XII, line 4 for each year listed	129,672	110,229	135,038	135,471	510,410
d Amounts included in line 2c not used directly for active conduct exempt act					0
e Qualifying distributions made directly for active conduct of exempt activities Subtract line 2d from line 2c.	129,672	110,229	135,038	135,471	510,410
3 Complete 3a, b, or c for the alternative test relied upon:					
a "Assets" alternative test -- enter:					
(1) Value of all assets	445,616	453,217	444,381	379,885	1,723,099
(2) Value of assets qualifying under section 4942(j)(3)(B)(i)	445,616	453,217	444,381	379,885	1,723,099
b "Endowment" alternative test -- enter 2/3 of min. investment return shown in Part X, line 6 for each year listed.	22,407	22,110	23,927	19,179	87,623
c "Support" alternative test -- enter:					
(1) Total support other than gross investment income (interest, dividends, rents, payments on securities loans (section 512(a)(5)), or royalties)					0
(2) Support from general public and 5 or more exempt organizations as provided in section 4942(j)(3)(B)(iii)					0
(3) Largest amount of support from an exempt organization					0
(4) Gross investment income					0

Part XV Supplementary Information (Complete this part only if the foundation had \$5,000 or more in assets at any time during the year -- see the instructions.)

1 Information Regarding Foundation Managers:

a List any managers of the foundation who have contributed more than 2% of the total contributions received by the foundation before the close of any tax year (but only if they have contributed more than \$5,000) (See section 507(d)(2))
NONE

b List any managers of the foundation who own 10% or more of the stock of a corporation (or an equally large portion of the ownership of a partnership or other entity) of which the foundation has a 10% or greater interest
NONE

2 Information Regarding Contribution, Grant, Gift, Loan, Scholarship, etc., Programs:

Check here if the foundation only makes contributions to preselected charitable organizations and does not accept unsolicited requests for funds. If the foundation makes gifts, grants, etc. (see the instructions) to individuals or organizations under other conditions, complete items 2a, b, c, and d.

a The name, address, and telephone number of the person to whom applications should be addressed:

b The form in which applications should be submitted and information and materials they should include.

c Any submission deadlines

d Any restrictions or limitations on awards, such as by geographical areas, charitable fields, kinds of institutions, or other factors

Part XV Supplementary Information (continued)

3 Grants and Contributions Paid During the Year or Approved for Future Payment

Recipient	If recipient is an individual, show any relationship to any foundation manager or substantial contributor	Foundation status of recipient	Purpose of grant or contribution	Amount
Name and address (home or business)				
<p>a Paid during the year</p>				
Total				<p>▶ 3a 0</p>
<p>b Approved for future payment</p>				
Total				<p>▶ 3b</p>

Part XVI-A Analysis of Income-Producing Activities

Enter gross amounts unless otherwise indicated.

	Unrelated business income		Excluded by section 512, 513, or 514		(e) Related or exempt function income (See the instructions.)
	(a) Business code	(b) Amount	(c) Excl. code	(d) Amount	
1 Program service revenue:					
a SEE ATTACHMENT #13					52,528
b _____					
c _____					
d _____					
e _____					
f _____					
g Fees & contracts from government agencies					
2 Membership dues and assessments					53,420
3 Interest on savings and temporary cash investments				65	
4 Dividends and interest from securities				1,172	
5 Net rental income or (loss) from real estate:					
a Debt-financed property					
b Not debt-financed property					
6 Net rental income or (loss) from personal property					
7 Other investment income					
8 Gain or (loss) from sales of assets other than inventory					
9 Net income or (loss) from special events					
10 Gross profit or (loss) from sales of inventory					
11 Other revenue a _____					
b SEE ATTACHMENT #14				1,738	10
c _____					
d _____					
e _____					
12 Subtotal. Add columns (b), (d), and (e)		0		2,975	105,958
13 Total. Add line 12, columns (b), (d), and (e)				13	108,933

(See worksheet in line 13 instructions to verify calculations.)

Part XVI-B Relationship of Activities to the Accomplishment of Exempt Purposes

Line No. ▼	Explain below how each activity for which income is reported in column (e) of Part XVI-A contributed importantly to the accomplishment of the foundation's exempt purposes (other than by providing funds for such purposes). (See the instructions.)

Part XVII Information Regarding Transfers To and Transactions and Relationships With Noncharitable Exempt Organizations

- 1 Did the organization directly or indirectly engage in any of the following with any other organization described in section 501(c) of the Code (other than section 501(c)(3) organizations) or in section 527, relating to political organizations?
- | | Yes | No |
|--|-----|----|
| a Transfers from the reporting foundation to a noncharitable exempt organization of: | | |
| (1) Cash | | X |
| (2) Other assets | | X |
| b Other transactions: | | |
| (1) Sales of assets to a noncharitable exempt organization | | X |
| (2) Purchases of assets from a noncharitable exempt organization | | X |
| (3) Rental of facilities, equipment, or other assets | | X |
| (4) Reimbursement arrangements | | X |
| (5) Loans or loan guarantees | | X |
| (6) Performance of services or membership or fundraising solicitations | | X |
| c Sharing of facilities, equipment, mailing lists, other assets, or paid employees | | X |
| d If the answer to any of the above is "Yes," complete the following schedule. Column (b) should always show the fair market value of the goods, other assets, or services given by the reporting foundation. If the foundation received less than fair market value in any transaction or sharing arrangement, show in column (d) the value of the goods, other assets, or services received. | | |

(a) Line no.	(b) Amount involved	(c) Name of noncharitable exempt organization	(d) Description of transfers, transactions, and sharing arrangements

2 a Is the foundation directly or indirectly affiliated with, or related to, one or more tax-exempt organizations described in section 501(c) of the Code (other than section 501(c)(3)) or in section 527? Yes No

b If "Yes," complete the following schedule.

(a) Name of organization	(b) Type of organization	(c) Description of relationship

Under penalties of perjury, I declare that I have examined this return, including accompanying schedules and statements, and to the best of my knowledge and belief it is true, correct, and complete. Declaration of preparer (other than taxpayer) is based on all information of which preparer has any knowledge.

Sign Here: *Stephen O. Dean* 105-01-12 PRESIDENT
 Signature of officer or trustee Date Title

May the IRS discuss this return with the preparer shown below (see instructions)? Yes No

Paid Preparer Use Only: RONALD H THOMAS 04-28-2012 self-employed P00128697
 Firm's name: RONALD H THOMAS CPA Firm's EIN: Firm's address: 11301 SPUR WHEEL LANE Phone no. (301) 983-0330

Schedule B
(Form 990, 990-EZ,
or 990-PF)

Department of the Treasury
Internal Revenue Service

Schedule of Contributors

▶ Attach to Form 990, Form 990-EZ, or Form 990-PF.

OMB No. 1545-0047

2011

Name of the organization

Employer identification number

FUSION POWER ASSOCIATES

52-1162794

Organization type (check one)

Filers of:

Section:

Form 990 or 990-EZ

501(c)() (enter number) organization

4947(a)(1) nonexempt charitable trust **not** treated as a private foundation

527 political organization

Form 990-PF

501(c)(3) exempt private foundation

4947(a)(1) nonexempt charitable trust treated as a private foundation

501(c)(3) taxable private foundation

Check if your organization is covered by the **General Rule** or a **Special Rule**.

Note. Only a section 501(c)(7), (8), or (10) organization can check boxes for both the General Rule and a Special Rule. See instructions.

General Rule

For an organization filing Form 990, 990-EZ, or 990-PF that received, during the year, \$5,000 or more (in money or property) from any one contributor. Complete Parts I and II.

Special Rules

For a section 501(c)(3) organization filing Form 990 or 990-EZ that met the 33 1/3% support test of the regulations under sections 509(a)(1) and 170(b)(1)(A)(vi), and received from any one contributor, during the year, a contribution of the greater of (1) \$5,000 or (2) 2% of the amount on (i) Form 990, Part VIII, line 1h or (ii) Form 990-EZ, line 1. Complete Parts I and II

For a section 501(c)(7), (8) or (10) organization filing Form 990 or 990-EZ that received from any one contributor, during the year, total contributions of more than \$1,000 for use exclusively for religious, charitable, scientific, literary, or educational purposes, or the prevention of cruelty to children or animals. Complete Parts I, II, and III.

For a section 501(c)(7), (8), or (10) organization filing Form 990 or 990-EZ that received from any one contributor, during the year, contributions for use exclusively for religious, charitable, etc., purposes, but these contributions did not total more than \$1,000. If this box is checked, enter here the total contributions that were received during the year for an exclusively religious, charitable, etc., purpose. Do not complete any of the parts unless the **General Rule** applies to this organization because it received nonexclusively religious, charitable, etc., contributions of \$5,000 or more during the year ▶ \$ _____

Caution. An organization that is not covered by the General Rule and/or the Special Rules does not file Schedule B (Form 990, 990-EZ, or 990-PF), but it **must** answer "No" on Part IV, line 2 of its Form 990, or check the box on line H of its Form 990-EZ or on Part I, line 2, of its Form 990-PF, to certify that it does not meet the filing requirements of Schedule B (Form 990, 990-EZ, or 990-PF)

For Paperwork Reduction Act Notice, see the Instructions for Form 990, 990-EZ, or 990-PF.

Schedule B (Form 990, 990-EZ, or 990-PF) (2011)

Name of organization **FUSION POWER ASSOCIATES** Employer identification number **52-1162794**

Part I Contributors (see instructions). Use duplicate copies of Part I if additional space is needed

(a) No.	(b) Name, address, and ZIP + 4	(c) Total contributions	(d) Type of contribution
1	AMERICAN PHYSICAL SOCIETY ONE PHYSICS ELLIPSE COLLEGE PARK, MD 20740	\$ 5,000	Person <input checked="" type="checkbox"/> Payroll <input type="checkbox"/> Noncash <input type="checkbox"/> (Complete Part II if there is a noncash contribution.)
—	_____ _____ _____	\$ _____	Person <input type="checkbox"/> Payroll <input type="checkbox"/> Noncash <input type="checkbox"/> (Complete Part II if there is a noncash contribution.)
—	_____ _____ _____	\$ _____	Person <input type="checkbox"/> Payroll <input type="checkbox"/> Noncash <input type="checkbox"/> (Complete Part II if there is a noncash contribution.)
—	_____ _____ _____	\$ _____	Person <input type="checkbox"/> Payroll <input type="checkbox"/> Noncash <input type="checkbox"/> (Complete Part II if there is a noncash contribution.)
—	_____ _____ _____	\$ _____	Person <input type="checkbox"/> Payroll <input type="checkbox"/> Noncash <input type="checkbox"/> (Complete Part II if there is a noncash contribution.)
—	_____ _____ _____	\$ _____	Person <input type="checkbox"/> Payroll <input type="checkbox"/> Noncash <input type="checkbox"/> (Complete Part II if there is a noncash contribution.)

990 SCHEDULE OF OTHER INCOME

ATTACHMENT 1: PAGE 1 - 990-PF PAGE 1, PART I, LINE 11

OPEN TO PUBLIC INSPECTION	For calendar year 2011 or tax period beginning _____, and ending _____	Employer Identification Number 52-1162794
Name of Organization FUSION POWER ASSOCIATES		

Description of Other Income	Revenue and Expenses	Net Investment Income	Adjusted Net Income
MEETINGS & SEMINARS	39,580		
SUBSCRIPTIONS	12,948		
MISCELLANEOUS	10		
DUES	53,420		
UNREALIZED GAIN ON INVESTMENTS	1,738	1,738	1,738
Totals:	107,696	1,738	1,738

990 SCHEDULE OF LEGAL FEES

ATTACHMENT 2: PAGE 1 - 990-PF PAGE 1, PART I, LINE 16A

OPEN TO PUBLIC INSPECTION	For calendar year 2011, or tax period beginning _____, and ending _____
------------------------------	---

Name of Organization FUSION POWER ASSOCIATES	Employer Identification Number 52-1162794
--	---

Legal Description	Amount	Net Investment Income	Adjusted Net Income	Disbursements for Charity
LEGAL FEES	145	145	145	
Total:	145	145	145	

990 SCHEDULE OF ACCOUNTING FEES

ATTACHMENT 3: PAGE 1 - 990-PF PAGE 1, PART I, LINE 16B

OPEN TO PUBLIC INSPECTION For calendar year 2011, or tax period beginning , and ending

Name of Organization FUSION POWER ASSOCIATES Employer Identification Number 52-1162794

Accounting Category	Amount	Net Investment Income	Adjusted Net Income	Disbursements for Chanty
ACCOUNTING FEES	950	90	90	860
Total:	950	90	90	860

990 SCHEDULE OF TAXES PAID

ATTACHMENT 4: PAGE 1 - 990- PF PAGE 1, PART I, LINE 18

OPEN TO PUBLIC INSPECTION For calendar year 2011, or tax period beginning , and ending

Name of Organization FUSION POWER ASSOCIATES Employer Identification Number 52-1162794

Category	Amount	Net Investment Income	Adjusted Net Income	Disbursements for Charity
PAYROLL TAXES	509	25	25	484
REAL ESTATE TAX	4,967	248	248	4,719
OTHER	80	80	80	
Total	5,556	353	353	5,203

990 OTHER EXPENSES SCHEDULE

ATTACHMENT 5: PAGE 1 990-PF PAGE 1, PART I, LINE 23

OPEN TO PUBLIC INSPECTION For calendar year 2011, or tax period beginning , and ending

Name of Organization: FUSION POWER ASSOCIATES
 Employer Identification Number: 52-1162794

Description of Activity	Revenue and Expenses	Net Investment Income	Adjusted Net Income	Disbursements for Charity
CONTRACT EXPENSES	9,978			6,978
SUPPLIES & SERVICES	4,327			4,327
TELEPHONE & COMMUNICATIONS	3,563	35	35	3,528
POSTAGE SHIPPING & DELIVERY	727			727
BOOKS SUBSCRIPTIONS				
REFERENCES	506			506
BANK SERVICE CHARGES	1,798	35	35	1,763
FUSION ENGINEERING AWARD	500			500
Total:	21,399	70	70	18,329

990 SCHEDULE OF LAND, BUILDING & EQUIPMENT

ATTACHMENT 6: PAGE 1 - 990-PF PAGE 2, PART II, LINE 14

OPEN TO PUBLIC
INSPECTION

For Calendar year 2011, or tax year period beginning

and ending

Name of Organization		Employer Identification Number		Ending FML
FUSION POWER ASSOCIATES		52-1162794		(990-PF Only)
Category or Description of Property	Cost or Other Basis	Accumulated Depreciation	End of Year Book Value	
CONDO FURNITURE	134,205 36,169	68,372 36,169	65,833	
Total:				65,833
			170,374	104,541

990 BOOKS ARE IN CARE OF

ATTACHMENT 7 - 990-PF PAGE 5, PART VII-A, LINE 14

OPEN TO PUBLIC INSPECTION For calendar year 2011, or tax period beginning , and ending

Name of Organization FUSION POWER ASSOCIATES Employer Identification Number 52-1162794

Part VII-A - Line 14

Individual Name RUTH WATKINS

or Business Name

Street Address 2 PROFESSIONAL DR #249

U S Address

Zip code 20879 City GAITHERSBURG State MD

Foreign Address

City

Province or State

Country

Postal code

Phone Number (301) 258-0545

Fax Number

990 CURRENT OFFICERS, DIRECTORS, TRUSTEES, AND KEY EMPLOYEES

ATTACHMENT 8: PAGE 1 - 990-PF PAGE 6, PART VIII

OPEN TO PUBLIC INSPECTION For calendar year 2011, or tax period beginning , and ending

Name of Organization: FUSION POWER ASSOCIATES
 Employer Identification Number: 52-1162794

(A) Name and Address	(B) Title and Average Hrs per Week	(C) Compensation (If not paid, enter 0)	(D) Cont. to Employee Ben Plans & Def Comp	(E) Expense Account & Other Allowances
STEPHEN O DEAN 2 PROFESSIONAL DR #249 GAITHERSBURG, MD 20879	PRESIDENT 20.00	57,200	0	0
RUTH WATKINS 2 PROFESSIONAL DR #249 GAITHERSBURG, MD 20879	VICE PRES 4.00	6,650	0	0
LIST ATTACHED USA,	DIRECTORS 1.00	0	0	0

**990 COMPENSATION OF THE FIVE HIGHEST PAID INDEPENDENT CONTRACTORS
FOR PROFESSIONAL SERVICES**

ATTACHMENT 9: PAGE 1 990-PF PAGE 6, PART VIII, LINE 2

OPEN TO PUBLIC INSPECTION For calendar year 2011, or tax period beginning , and ending

Name of Organization FUSION POWER ASSOCIATES Employer Identification Number 52-1162794

Part VIII Compensation of the Five Highest Paid Independent Contractors for Professional Services		
(a) Name and address of each independent contractor paid more than \$50,000	(b) Type of service	(c) Compensation
STEPHEN O DEAN		55,250
VENETIA BUTLER		1,000
XIXI D'MOON		2,760

990 SUMMARY OF DIRECT CHARITABLE ACTIVITIES

ATTACHMENT 10: PAGE 1 - 990-PF PAGE 7, PART IX-A, LINE 1

OPEN TO PUBLIC INSPECTION	For calendar year 2011, or tax period beginning	, and ending
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Name of Organization FUSION POWER ASSOCIATES	Employer Identification Number 52-1162794
---	--

Charitable Activity
ATTACHMENT IX-A (1)

990 SUMMARY OF DIRECT CHARITABLE ACTIVITIES

ATTACHMENT 11: PAGE 1 - 990-PF PAGE 7, PART IX-A, LINE 2

OPEN TO PUBLIC INSPECTION	For calendar year 2011, or tax period beginning	, and ending
------------------------------	---	--------------

Name of Organization FUSION POWER ASSOCIATES	Employer Identification Number 52-1162794
---	--

Charitable Activity
ATTACHMENT IX-A (2)

990 SUMMARY OF DIRECT CHARITABLE ACTIVITIES

ATTACHMENT 12: PAGE 1 - 990-PF PAGE 7, PART IX-A, LINE 3

OPEN TO PUBLIC INSPECTION	For calendar year 2011, or tax period beginning	, and ending
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Name of Organization FUSION POWER ASSOCIATES	Employer Identification Number 52-1162794
---	--

Charitable Activity
ATTACHMENT IX-A (3)

990 PART VII - ANALYSIS OF INCOME-PRODUCING ACTIVITIES

ATTACHMENT 13: PAGE 1 - 990-PF PAGE 12, PART XVI-A, LINE 1

OPEN TO PUBLIC INSPECTION For calendar year 2011, or tax period beginning , and ending

Name of Organization: FUSION POWER ASSOCIATES
 Employer Identification Number: 52-1162794

Item	Program Service Revenue	Unrelated Business Income		Excluded by Section 512, 513 or 514		(e) Related or Exempt Function Income (see instructions)
		(a) Bus Code	(b) Amount	(c) Exc ERROR:	(d) Amount Code	
A	MEETINGS					39,580
B	PUBLICATIONS					12,948
Totals:						52,528

990 SCHEDULE OF OTHER REVENUE

ATTACHMENT 14: PAGE 1 - 990-PF PAGE 12, PART XVI-A, LINE 11

OPEN TO PUBLIC INSPECTION For calendar year 2011, or tax period beginning _____, and ending _____

Name of Organization: FUSION POWER ASSOCIATES
 Employer Identification Number: 52-1162794

Item	Program Service Revenue	Unrelated Business Income		Excluded by Section 512, 513 or 514		(e) Related or Exempt Function Income (see instructions)
		(a) Business Code	(b) Amount	(c) Excl ERROR: code	(d) Amount	
A B	UNREALIZED GAIN				1,738	10
Totals:					1,738	10

Depreciation and Amortization (Including Information on Listed Property)

Department of the Treasury
Internal Revenue Service (99)

▶ See separate instructions.

▶ Attach to your tax return.

Name(s) shown on return FUSION POWER ASSOCIATES	Business or activity to which this form relates FOR FORM 990-PF	Identifying number 52-1162794
---	---	---

Part I Election To Expense Certain Property Under Section 179

Note: If you have any listed property, complete Part V before you complete Part I.

1 Maximum amount (see instructions)	1	
2 Total cost of section 179 property placed in service (see instructions)	2	
3 Threshold cost of section 179 property before reduction in limitation (see instructions)	3	
4 Reduction in limitation Subtract line 3 from line 2. If zero or less, enter -0-	4	
5 Dollar limitation for tax year Subtract line 4 from line 1. If zero or less, enter -0-. If married filing separately, see instructions	5	500,000
6 (a) Description of property (b) Cost (busn use only) (c) Elected cost		
7 Listed property. Enter the amount from line 29 7		
8 Total elected cost of section 179 property. Add amounts in column (c), lines 6 and 7	8	
9 Tentative deduction. Enter the smaller of line 5 or line 8	9	
10 Carryover of disallowed deduction from line 13 of your 2010 Form 4562	10	
11 Business income limitation. Enter the smaller of business income (not less than zero) or line 5 (see instructions)	11	500,000
12 Section 179 expense deduction. Add lines 9 and 10, but do not enter more than line 11	12	
13 Carryover of disallowed deduction to 2012. Add lines 9 and 10, less line 12 .. ▶	13	

Note: Do not use Part II or Part III below for listed property. Instead, use Part V

Part II Special Depreciation Allowance and Other Depreciation (Do not include listed property) (See instructions)

14 Special depreciation allowance for qualified property (other than listed property) placed in service during the tax year (see instructions)	14	
15 Property subject to section 168(f)(1) election	15	
16 Other depreciation (including ACRS)	16	2,580

Part III MACRS Depreciation (Do not include listed property.) (See instructions.)

Section A

17 MACRS deductions for assets placed in service in tax years beginning before 2011	17	
18 If you are electing to group any assets placed in service during the tax year into one or more general asset accounts, check here	<input type="checkbox"/>	

Section B - Assets Placed in Service During 2011 Tax Year Using the General Depreciation System

(a) Classification of property	(b) Month and year placed in service	(c) Basis for depr. (business/investment use only -- see instructions)	(d) Recovery period	(e) Convention	(f) Method	(g) Depreciation deduction
19a 3-year property						
b 5-year property						
c 7-year property						
d 10-year property						
e 15-year property						
f 20-year property						
g 25-year property			25 yrs		S/L	
h Residential rental property			27.5 yrs	MM	S/L	
			27.5 yrs.	MM	S/L	
i Nonresidential real property			39 yrs.	MM	S/L	
				MM	S/L	

Section C - Assets Placed in Service During 2011 Tax Year Using the Alternative Depreciation System

20a Class life					S/L	
b 12-year			12 yrs.		S/L	
c 40-year			40 yrs.	MM	S/L	

Part IV Summary (See instructions.)

21 Listed property. Enter amount from line 28	21	
22 Total. Add amounts from line 12, lines 14 through 17, lines 19 and 20 in column (g), and line 21. Enter here and on the appropriate lines of your return. Partnerships and S corporations -- see instructions	22	2,580
23 For assets shown above and placed in service during the current year, enter the portion of the basis attributable to section 263A costs	23	

For Paperwork Reduction Act Notice, see separate instructions

2011 Federal Depreciation Schedule

FUSION POWER ASSOCIATES
52-1162794

04-27-2012

Description	Date	Method	Year	Cost	Land/ Other	§179	Spec Allow	Basis	Prior	Current
N/A - Not Applicable										
CONDO	01-01-84	A S/LMM	30	134,205	56,805	0	0	77,400	65,792	2,580
FURNIT JRE	01-01-84	200DBHY	7	36,169	0	0	0	36,169	36,169	0
2 Assets			Totals	170,374	56,805	0	0	113,569	101,961	2,580
2 Assets			Grand Totals	170,374	56,805	0	0	113,569	101,961	2,580

* Asset disposed this year

-C Carryover basis in like-kind exchange transaction

-B Excess basis in like-kind exchange transaction

2011 AMT Depreciation Schedule

FUSION POWER ASSOCIATES
52-1162794

04-27-2012

Description	Date	Method	Year	Basis	Prior	AMT	Regular	Adjust
N/A - Not Applicable								
CONDO	01-01-84	A S/LMM	40	77,400	12,903	2,580	2,580	0
FURNITURE	01-01-84	150DBHY	10	36,169	0	0	0	0
2 Assets	Totals			113,569	12,903	2,580	2,580	0
2 Assets	Grand Totals			113,569	12,903	2,580	2,580	0

* Asset disposed this year

-C Carryover basis in like-kind exchange transaction

-B Excess basis in like-kind exchange transaction

2011 DETAIL STATEMENTS

FUSION POWER ASSOCIATES
52-1162794

PAGE 1

STATEMENT #1 - CONTRIBUTIONS, GIFTS, GRANTS (EZ1 LINE 1)

LAWRENCE BERKELEY NATL LAB.....	2,530
COALITION FOR PLASMA SCIENCE.....	4,288
COALITION G&A.....	464
LBNL G&A.....	343
DONATIONS GENERAL.....	1,525
DONATIONS ENGINEERING PRIZE FUND.....	595
AMERICAN PHYSICAL SOCIETY.....	5,000

TOTAL CARRIED TO EZ1 LINE 1.....	14,745
----------------------------------	--------

Part IX-A

1. Summary of Charitable Activities

Since its inception in August 1979, FPA has continuously conducted programs designed to provide the scientific community and the public with information about fusion power generation as a potential source to supply a portion of the world's future energy needs.

(1) Publishing a bimonthly newsletter for members and other interested parties. The newsletter reports on technical developments relating to fusion power generation, discusses administrative and governmental activities and decisions relating to fusion power development and announces meetings, forums, and symposia at which fusion power will be discussed. Copies of the newsletters published for January/February, July/August, and November/December 2011 are attached as Attachments A-1, A-2, and A-3.

(2) Sponsoring conferences, forums and other studies to assess the technological advances of fusion power generation. The product of any such conference, forum or study is made available to all persons, including interested government officials and members of the public. FPA sponsored one conference in 2011. The proceedings of conferences are published in the Journal of Fusion Energy (Plenum Press).

(3) Research and analyses in fusion. The focus of such research and analyses is the program management and development of fusion science and technology. FPA received a grant in 2011 from the American Physical Society.

FPA will continue to conduct conferences, publish newsletters and periodicals, reports, and to respond to invitations to make presentations to government panels, public forums, or other groups interested in fusion power production or energy production generally. In addition, FPA anticipates that, as funding permits, the above activities may be expanded.

Fusion Power Associates
Attachment to 990 PF, 2011

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**Fusion Power Associates
Attachments to 990 PF, 2011**

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Fusion Power Report

Complete Coverage Of Worldwide Fusion Developments

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SLANTS & TRENDS

ITER Director General, Osamu Motojima, issues statement to staff.

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The ITER Council met November 17-18 in Cadarache and "noted with approval the recent progress and pace of development within the ITER Organization."

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ITER Site Construction is making rapid progress on the Headquarters building, tokamak excavation and Poloidal Field Coil Winding Facility

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The U.S. National Academies review of Inertial Fusion for Energy began with a 2 day meeting in December. A second meeting is scheduled for late January.

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Research on the LHD Stellarator in Japan was summarized in a special issue of the journal Fusion Science and Technology.

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Tokamak T-15 at the Kurchatov Institute in Moscow will be upgraded and restarted, according to Russian sources

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Kazakhstan Spherical Torus KTM is in initial operation. Device is aimed at study of materials for future fusion reactors. See Story on page 5

Prince Albert II presides over opening of First Monaco Fusion Energy Days Conference

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ITER Update

ITER Director General Osamu Motojima recently issued the following message to the ITER staff.

"Dear all,

"Some very active weeks lie behind us and I would like to take this opportunity to highlight some of the major events that have occurred since First of all, let me recap the outcome of the seventh meeting of the ITER Council that took place 17-18 November. To summarize the outcome, the Council charged us to continue and implement the cost containment exercise, to finalize the list of unapproved Additional Direct Investments (ADI) and to brush up the budget planning for the years 2011 to 2013. We have already committed ourselves intensively to these charges.

"Since the approval of the ITER Baseline in the Extraordinary Council Meeting in July of this year, the ITER Organization has focused its efforts on implementing this "roadmap" and also the new management structure. Concerning the Baseline, our top priority is to continue to avoid any slippage in the schedule and to optimize delivery of the design and components in six priority areas magnet coil feeder, cryostat, vacuum vessel, central solenoid, TF coils and PF coils.

"We are also committed to ambitious cost containment actions within the IO and the Domestic Agencies. These will need to be reflected in the Work Breakdown Structure as soon as possible. A response to the budget cap of 7.3 Billion Euro (4700 kIUA) set by the extraordinary ITER Council, this goal cannot be realized without a strong collaboration and a good team spirit between the ITER Organization and its agencies. I take this opportunity to thank all my colleagues in the Domestic Agencies and the ITER Organization for the tremendous effort they are already making.

"Regarding the management structure, I reported on the progress made in the implementation of a new management structure--selecting each member of staff based on their excellence and professionalism--and on the necessary adjustments needed to finalize it. Through this effort, we will execute adequate measures to improve transparency in the operation of the project, and seek a more strategic approach to budgeting and planning.

"Then, on the 17 November, we celebrated the laying of the Foundation Stone for the future ITER Headquarters building - another landmark in the history of the ITER project. The fusion community, to which I have belonged for the past three decades, had long awaited that moment. Our closely nurtured dream has now become a tangible reality.

"In a little more than 18 months, we will move into this beautifully designed and fully functional building. This is the place where we, as a responsible Organization, will work as hard as we can to meet our deadlines and make ITER happen. This foundation stone will bear witness, for centuries to come, to this great human, scientific and technological adventure. Let me take this opportunity to re-iterate my gratitude for the profound support we have received so far from the seven ITER Members, the local governments and the people in this region. Thank you very much, merci!

"Finally, two weeks ago, we witnessed the premiere of a new conference series, the Monaco ITER International Fusion Energy Days, in short MIIFED. The ITER Organization and the Principality of Monaco share a common concern for the future of energy and the preservation of our planet's resources, and that is why we have joined our forces to focus on what is at stake with fusion and energy. The first MIIFED edition was already a big success. Representatives from each ITER Member told us that fusion energy is on their agenda for satisfying the energy demand in the second half of this century. The people living on this planet count on us, and it's now up to us to deliver!"

ITER Council Meeting

On 17-18 November, the ITER Council (IC), the Governing Body of the ITER Organization, convened for its seventh meeting. The meeting in Cadarache, France, brought together representatives of the seven ITER Members: China, the European Union, India, Japan, Korea, Russia and the United States under the chairmanship of Evgeny Velikhov (Russia) and an observer from the International Atomic Energy Agency (IAEA).

ITER Director-General Osamu Motojima presented a status report of the ITER project. The project entered the Construction Phase immediately after the Baseline was approved at the extraordinary IC on July 28, 2010. This report included a new strategy for cost savings and cost containment.

The Council welcomed the actions taken by the Director-General since his appointment and commended the strong collaboration between the ITER Organization and the Domestic Agencies towards cost containment and cost savings. The ITER Council noted with approval the recent progress and pace of development within the ITER Organization. This includes extensive work at the ITER site and the placement of high-tech manufacturing contracts in all ITER Parties, including the Vacuum Vessel, which is a critical path component. In total,

46 procurement arrangements representing 60% on the total value of the project have been signed.

The Council encouraged further efforts by the ITER Organization and the Domestic Agencies to improve coordination and to reduce costs. The Council approved the Annual Work Plan and the Budget for 2011. The Chairs of the ITER Council and its subsidiary bodies were re-elected.

ITER Council members and experts, Domestic Agency Heads, together with representatives of the local communities, celebrated the official start of construction of the Headquarters Building. On this historic occasion, the Chair of the ITER Council, Academician Evgeny Velikhov, stated "this is a very important moment in the history of ITER; it is the day our dream begins to take shape".

The meetings of the ITER Council usually follow a stringent agenda. After the opening and before the Delegates come to discuss the heart of the matter, the Chairman goes around the table and asks the Heads of the seven Delegations for an opening statement, statements that this time all but confirmed the commitment of the seven Member States despite sufferings due to the economic crises.

"I would like to conclude by saying that in this period of economic stress, the U.S. Government remains fully committed to ITER and I and my colleagues in the Administration are working aggressively to secure full funding to meet US commitments", William Brinkman, the Head of the US Delegation and Director of the Office of Science at the US Department of Energy, said. "We may go through some difficult times in the near future, but I would encourage my colleagues in the ITER Council to openly discuss any difficulties they are facing and how other ITER Members may provide assistance. We are all in this together."

KIM Young Shik, the Head of the Korean Delegation and Deputy Minister for Education, Science and Technology, called ITER "a vital mission for all humanity. I believe we must always bear in mind, that the success of fusion energy does not only concern the future of the seven Members, it is the outcome of our collective effort and more importantly, a dream and hope for all of humanity."

Remmelt Haange Named Head of ITER Project Department

At its recent meeting, the ITER Council approved the appointment of Remmelt Haange as Deputy Director-General and Head of the ITER Project Department. "Rem" - as people call him — is a very experienced fusion engineer. He worked on JET for more than 15 years and led the ITER team

in Naka, Japan, for many years before he became Technical Director of W7-X, the Stellarator project based in Greifswald, Germany. He is thus very familiar with the challenges of fusion technology as such and the challenges of managing a fusion project. And because he truly believes in fusion as "the only alternative" he has decided to join the ITER management rather than thinking about his retirement. He will take up his duties on 17 January

ITER Construction

The work on the ITER platform is progressing rapidly. The future Headquarters building is coming out of the ground, the basement is half there and its ceiling is taking shape too. The works are thus well on schedule and should be completed in the summer of 2012.

As for the Tokamak excavation, the first phase work has finished and soon the trim blasting to complete the excavation will commence. These works will run into early 2011 and will be followed with the pouring of the first concrete in springtime.

The construction of the Poloidal Field Coil Winding facility is also making impressive progress. Most of the floor slab is completed and the concrete columns are up. The crane runway beams are also well underway. The next step now is the mounting of the steel super-structure, which will finish the main structural aspects of the building. Completion of the final building is scheduled at the end of 2011.

ITER Insurance

On Tuesday, 30 November, the Director-General of the ITER Organization, Osamu Motojima, and the CEO of ZURICH France, Paolo Ribotta, finalized the signature process of the Global Insurance Contract that covers the construction and assembly of the ITER plant. The contract is worth 43 Million Euros and involves many insurance companies from Switzerland, France, UK, USA, Germany, Ireland, China, Korea and Japan.

ITER Correction Coils

The Correction Coils (CC) are part of the ITER Magnet System and they will play a key role in ITER's performance. The CC are a set of 18 coils inserted between the TF and PF coils and distributed around the Tokamak. Their function is to correct the error field modes resulting from geometrical deviations caused by manufacturing and assembly tolerances. Although much lighter and slimmer than the TF and PF coils - and running a smaller current (10 kA) - the CC are larger in size (up to 8 m wide). Consequently, the manufacture of these coils is not as straightforward as it would seem at first sight. The difficulty lies first in the high preci-

sion required in their final dimensions, because the CC must fit into a narrow, predetermined space; secondly, their unusual shape, which is non-planar for side CC and planar, but banana shaped for the top and bottom CC states another challenge. For this reason, the manufacture process must be carefully developed to ensure the manufacturability of these coils within specified tolerances, before advancing to the actual manufacturing stage

Two Procurement Arrangements (PAs) have been signed by the ITER Organization (IO) for acquisition of the CC, both with the Chinese Domestic Agency (CN-DA)

Inertial Fusion for Energy Review Initiated

The U.S National Academies, National Research Council, commenced its study "Prospects for Inertial Confinement Fusion Energy Systems" on December 16 with a meeting at the Keck Center, 500 5th Street, NW, Washington, DC and will hold a second meeting in Pleasonton, CA, on January 29-31. Persons wishing to attend the public sessions should contact Jonathan Yanger jyanger@nas.edu, Ph, 202-334-1544. A Committee has been formed, to be chaired by Ron Davidson (PPPL) and Jerry Kulcinski (U Wisconsin). Information on the project scope, committee membership and meeting can be accessed on the project's web site: <http://www8.nationalacademies.org/cp/projectview.aspx?key=49265>

Presentations for the public sessions of the first meeting included

Perspectives from the DOE Office of Science - Steve Koonin

Perspectives from the DOE Office of Fusion Energy Science - Ed Synakowski & Mark Koepke

Perspectives from NNSA Stockpile Stewardship - Chris Deeney

Findings from the 2003 FESAC report: "A Plan for the Development of Fusion Energy" -

Robert Goldston, Michael Campbell

Perspectives from OSTP - Steve Fetter

Perspectives from DOE Office of Science - Bill Brinkman

Perspectives from NNSA Defense Programs - Donald Cook

Findings from the 2004 FESAC report: "Review of the Inertial Fusion Energy Program," -

Rulon Linford

Challenges to Developing an ICF-based Energy Source - Harold Forsen

The review committee members are:

Ronald C. Davidson, co-chair

Gerald L. Kulcinski, co-chair

Charles Baker
 Roger Bangerter
 Riccardo Betti
 Jan Beyea
 Robert L. Byer
 Franklin Chang-Diaz
 Steven C. Cowley
 David Hammer
 Joseph S. Hezır
 Kathryn McCarthy
 Lawrence T. Papay
 Ken Schultz
 Andrew M. Sessler
 John Sheffield
 Thomas A. Tombrello, Jr.
 Dennis G. Whyte
 Jonathan S. Wurtele
 Rosa Yang

LHD Stellarator Progress

Recently, the journal *Fusion Science and Technology*, published a special issue (Vol. 58, No 1) on results from the Large Helical Device (LHD) in Japan. The issue comprises 13 chapters with 60 papers and covers not only the progress of experimental studies for past 12 years, but also work on diagnostics, heating devices, theory including three dimensional (3D) effects, and engineering related to superconductivity. LHD experiments started in 1998. Since then, studies to understand the intrinsic physics of net current-free plasmas have successfully proceeded. The LHD operational regime has been extended by increasing the heating capability to 23 MW of neutral beam injection (NBI), 3 MW of ion cyclotron resonance frequency (ICRF) heating, and 2.5 MW of electron cyclotron resonance heating (ECH). In addition, a new 5 MW perpendicular neutral beam injection system and a new ICRF antenna were added in FY 2010. Significant physical achievements include high beta (5.1%), high density ($1.2 \times 10^{21} \text{ m}^{-3}$), and steady state operation (3200 s with 490 kW), supported by a reliable cryogenic system that has safely operated for >56,000 hours. Global energy confinement obtained with a configuration optimized according to neoclassical theory, has proved comparable to that of tokamaks running in ELMy Hmode, exhibiting a gyro-Bohm-like property as seen in the International Stellarator Scaling (ISS95). Significant collisionality dependence (predicted by neoclassical theory) has not been observed. The optimization according to neoclassical transport theory successfully demonstrated that anomalous transport is reduced simultaneously. Further details at <http://www.ornl.gov/sci/fed/stelnews/>

Russian Tokamak T-15 to be Restarted

Tokamak T-15 at the Kurchatov Institute in Moscow made first plasma in 1988 and was shut down in 1995. It was the first tokamak to use superconducting niobium-tin conductors and its 24 toroidal superconducting magnet coils are still the largest in the world. An upgrade is now in progress, labeled T-15 MD (for "modified divertor") with the aim of restarting the device in 2014. Englen Azizov, director of the Moscow Institute of Tokamak Physics and Oleg Filatov, director of the Efremov Institute in St. Petersburg indicate that the device will add to the list of "ITER-complimentary machines" and also explore the physics needed for a fusion-fission hybrid reactor.

For further information, contact azizov@triniti.ru

Kazakhstan Spherical Tokamak KTM in Operation

The newest tokamak facility in the world, and the first fusion experiment in Kazakhstan, is the spherical tokamak KTM. KTM, which achieved first plasma in September 2010, is aimed at "the study of structural materials and components for future fusion reactors." The device has a plasma major radius of 0.9 m and a plasma minor radius of 0.45 m. The device is designed to reach a plasma current of 0.75 MA with duration of the current plateau of around 5 seconds. The device is designed to accommodate additional heating power of 5 MW and, eventually, is expected to have a thermal load on the divertor tiles in the range of 2 - 20 MW per square meter.

For further information contact I. Tazhibayeva. tazhibayeva@ntsc.kz

Monaco Fusion Energy Days Conference

From 23-25 November 2010, the First Monaco ITER International Fusion Energy Days took place in Monaco. The three-day conference, hosted by the Principality of Monaco, and jointly organized by the ITER Organization, the Principality, and the International Atomic Energy Agency (IAEA), offered an exceptional opportunity to explore and discuss what is at stake today in the energy world, and how fusion and ITER can help to meet the challenges of the coming decades.

The Principality of Monaco is supporting ITER in two of the most essential aspects of scientific life: the training of the next generation of physicists and engineers and the sharing of knowledge and experience. In January 2008, a Partnership Arrangement was signed between the ITER Organization and the Principality of Monaco, providing a contribution

from the Principality of EUR 5.5 million over a period of ten years. Thanks to this generous donation, the ITER Organization can finance five Post-doctoral Fellowships every two years and organize every other year in the Principality an International Conference on fusion energy and ITER-related matters: the Monaco-ITER International Fusion Energy Days (MIIFED).

Opening the first edition of this new conference series, His Serene Highness Prince Albert II left no doubt as to what had led him to support the ITER project. "This ambitious project obviously caught my attention because, in the end, it should open the door to an abundant source of energy which is fairly distributed all over the planet", the Prince said. "This new technology will particularly make it possible to limit global warming currently threatening our Earth and unbalancing ecosystems. By demonstrating the feasibility of fusion energy in the long-term, ITER is meeting a priority close to my heart; that of producing clean, safe energy on a large-scale to meet humanity's needs."

On the first day of the three-day conference, representatives from the seven ITER Members looked at how fusion fits into the broader energy context. Korea for example, a nation that is currently importing 97% of its domestic energy needs, implemented in 2007 a "Fusion Energy Development Promotion Law" which illustrates the nation's strong wish to develop fusion energy and to finally realize it as an energy option. Based on this law, a "Roadmap for Fusion Energy Development" has been established. "For Korea", Kijung Jung, the Director of the Korean ITER Domestic Agency said, "fusion energy represents a great potential energy source, as a green energy with carbon free, environmentally friendly and limitless source for generating massive energy production certainly from the 2050s onward. That is why we absolutely need the success of ITER."

India, as one of the world's largest emerging economies, has an equal interest to invest in the development of fusion technology, as explained by Anil Kakodkar, Member of the Indian Atomic Energy Commission: "In order to provide a decent quality of life to everyone, one should plan for at least 5000 kWh per capita electricity. For India alone, to reach 5000 kWh per capita, we need to add a 40% additional electricity generation capacity. In view of the serious climate change threat that now seems to be real, the "business as usual" approach clearly will not do. We do not know how close we are to the tipping point. However we need to act now to secure survival of our future generations. Development of fusion energy is one such action that we need to pursue as a priority."

Edmund Synakowski, Director of Fusion Energy Sciences within the U.S. Department of Energy, said that "fusion represents a transformational science that can be part of our long-term energy and climate solutions, and can be critical in enhancing political stability. This international meeting in Monaco is an indication of just the sort of engagement we need — fusion requires all of our talents, all of our resources, because the stakes are so high."

Jérôme Paméla, Director of Agence ITER France, the ITER host, said "ITER is among the highest-profile endeavours in which the European Union is involved. ITER is a paradigm of what France, as an EU member state, wants to promote: Europe involved in strategic innovative projects aiming towards a better future, and also Europe as a key partner in international cooperations. The ITER project is exceptional in many ways. He added, "Such a project does not come without a cost. The price for ITER must be put into perspective with its promise for long-term sustainability of worldwide energy supply and the cost of energy consumption"

The second day of this conference series focused on industry's involvement by giving a comprehensive update on the ITER licensing and construction status and the procurement strategies pursued by the seven Domestic Agencies. Day three was dedicated to a technical meeting jointly organized by ITER and the International Atomic Energy Agency (IAEA) reviewing the current status of research on ITER-relevant materials and technologies.

The presentations given in the course of the conference are available on the conference website www.mufed2010.com

FPA 2010 Annual Meeting Presentations Posted

The presentations at Fusion Power Associates 31st Annual Meeting and Symposium, Fusion Energy Focus on the Future, held December 1-2, 2010 in Washington, DC have been posted. They can be accessed at the FPA web site <http://fusionpower.org> and click on Annual Meetings. They can also be accessed at the FIRE web site: <http://fire.pppl.gov> and click on FPA Annual Meetings. Presentations from previous annual meetings are found via the same links.

Sheffield et al. Publish Book

Plasma Scattering of Electromagnetic Radiation (Elsevier, 2010) is an update of John Sheffield's 1975 book of the same title. The authors of the cur-

rent edition include Dustin Froula, Siegfried Glenzer and Neville Luhmann. The book is available on Amazon for \$134.00.

New to this edition are

- * Extensive material on industrial and warm dense matter plasmas, energetic particle measurements and instrumentation and techniques,
- * Expanded discussion on relativistic theory,
- * Coverage of experimental advances such as the application to high density plasmas of inertial fusion,
- * Computing techniques for solving basic equations to help researchers compare data to actual experiments, with an appendix dedicated to computation.

Workshop on Opportunities in Plasma Astrophysics Report

What powers the most luminous sources in the universe? How is the plasma state altered by ultra-strong magnetic field? How do magnetic explosions work?

These are among 10 major questions for plasma astrophysics identified in the recently released Report of the Workshop on Opportunities in Plasma Astrophysics (WOPA). "Plasma physics governs much of the behavior of the visible universe at all scales, from tokamaks to extra-galactic jets that are 10 billion times larger than the solar system," said Stewart Prager, Director of the U.S. Department of Energy's Princeton Plasma Physics Laboratory (PPPL). It is precisely this close relationship between fusion plasma physics and astrophysical phenomena that provided the motivation for the workshop and report.

PPPL scientist Hantao Ji said WOPA represents the first time for a comprehensive assessment of the opportunities in plasma astrophysics. Ji and Prager worked with a team to co-produce the report and were co-chairs of the workshop, held at PPPL earlier this year.

This grassroots effort brought together experimentalists, astronomers, and computational scientists to identify the major puzzles at this intersection of laboratory physics and space science, and to map out new strategies for better understanding the plasma universe.

Plasma astrophysics includes processes active in space, solar, and astrophysical plasmas. Often, a detailed understanding of the plasma physics under the specific space and astrophysical conditions

holds the key to many long-standing mysteries. The practice of plasma astrophysics consists of diverse components. low energy density magnetized and unmagnetized basic plasma experiments, high energy density experiments, liquid metal experiments, analytic theory, fluid and kinetic computation, theoretical astrophysics, observations (space, solar, and astrophysical), and aspects of fusion energy experiments

WOPA participants were from universities, national laboratories, government research institutions, and private industry, including several scientists from outside the U S.

The report and more information about the workshop is at: <http://www.pppl.gov/conferences/2010/WOPA/>.

Keane and Willis Receive FPA Special Awards

Former fusion program senior managers at the U.S. Department of Energy (DOE) Christopher J. Keane and John W. Willis were the recipients of Fusion Power Associates (FPA) Board of Directors Special Awards, presented at the FPA 31st Annual Meeting and Symposium, Fusion Energy: Focus on the Future, December 1-2 in Washington, DC. FPA Special Awards have been given periodically since 1980 to recognize individuals who have made special contributions to fusion development. A list of previous recipients is posted on the FPA web site <http://fusionpower.org> and click on Awards.

Dr. Keane served as head of the inertial confinement fusion program at the DOE National Nuclear Security Administration for many years. He has since joined the Lawrence Livermore National Laboratory. Dr. Willis served many years as a division director in the DOE Office of Fusion Energy Sciences. He retired in 2005.

Dr. Keane's award is "in recognition of and appreciation for your managerial contributions to the inertial confinement fusion technical program achievements that occurred during and beyond your tenure at the National Nuclear Security Administration of the U.S. Department of Energy."

Dr. Willis's award is "in recognition of and appreciation for your managerial contributions to the magnetic confinement fusion technical program achievements that occurred during and beyond your tenure at the U S Department of Energy."

Christopher J. Keane

Dr. Keane put his scientific career on hold, even though he was a leading research scientist in x-ray laser research, at a time when scientific leadership was needed at DOE. Under his able guidance, inertial fusion saw the greatest changes since the founding of the program, including initiation of the National Ignition Facility Project, conclusion of a key bi-national agreement with the French CEA, an effort to reclaim U S leadership in Petawatt laser research, construction of OMEGA EP, and joint OFES and ICF efforts in high-energy density physics. Chris also supported pulsed power activities at Sandia National Laboratories. He was the federal manager who oversaw the beginning of the National Ignition Campaign, the formal program to integrate national and international efforts to drive for ignition on the NIF. Chris also provided the leadership and insight that increased the scientific collaborative efforts of US ICF research internationally and across departmental lines in the US.

John Willis

From 1975 until his retirement in 2005, Dr. Willis held a series of positions in the DOE's Office of Fusion Energy Sciences, with increasing levels of responsibility. In every position, he took a broad view of what was good for the fusion program, as a whole, and for the ultimate success of fusion energy. In the last position he held at DOE, he was responsible for managing the bulk of U S. research on fusion energy sciences, from theory and computation to experiments on large facilities, from the smallest university grants to programs in enabling technologies. Throughout, John maintained knowledge of the issues and the people involved in his programs. Over the years, as the fusion program experienced large disruptions due to budget reductions and policy shifts, John worked within the office and with the leaders in the field to guide the program through change with minimum negative impact on the science and the scientists. When fusion researchers ran into difficulties, they invariably sought out John, who was always there to help find a viable path forward. His probing technical questions were insightful and always constructive, with the goal of helping people in the field make their best case. John Willis was a direct contributor to tremendous technical achievements in the fusion program that occurred during and beyond his tenure at DOE.

Chris can be reached at keane1@llnl.gov
John can be reached at macjohn@mac.com

Memoriam: Shoichi Yoshikawa

Dr Shoichi Yoshikawa, 76, was an internationally known leader in fusion energy research. He died peacefully at his home in Princeton, New Jersey on November 4, 2010

Born in Tokyo, Japan, Dr. Yoshikawa was a graduate of the University of Tokyo, and received his Ph.D. in Nuclear Engineering from MIT in 1961. He then joined the fusion energy research program at Princeton University's Plasma Physics Laboratory (PPPL) where he quickly became one of the scientific leaders of the Model C Stellarator experimental program. In 1966, he initiated the construction of a series of fusion experiments based on a new type of magnetic bottle using multipole magnetic fields to understand and reduce plasma turbulence

In 1968, he invented a new type of magnetic bottle to confine fusion plasmas called the Spherator, which according to his theoretical predictions, would reduce plasma turbulence under controlled conditions. This program culminated with the first levitated superconductor multipole experiment in 1970 and the larger Floating Multipole (FM-1) in 1973.

In the early 1970's, he returned to Japan as a Professor at the University of Tokyo where he led an experimental program and taught fusion plasma physics to a generation of graduate students. He returned to Princeton University in the late 1970's as a Lecturer with Rank of Professor in the Astrophysics Department where he continued to teach graduate students and was an advocate of innovative magnetic confinement concepts, such as the OCLATOR toroidal reactor concept.

Over the course of his career, he wrote seven books on subjects that included mathematical physics, atomic physics, plasma physics and fusion energy, and was a contributing author to several other technical books. He received the Mamichi-Shinbun Award for "Distinguished Publication" in 1974 for his popular book on fusion. He was a Fellow in the American Physical Society and retired from Princeton University in 2000.

Igor Sviatoslavsky Passes, Age 78

Igor N Sviatoslavsky, age 78, passed away on Sunday, Nov. 21, 2010 at University of Wisconsin Hospital.

Igor was born in Jerusalem on Oct. 11, 1932, the son of Nicholas and Alexandria Sviatoslavsky. He came to the United States on a Fulbright scholar-

ship in 1951 and attended Davidson College in North Carolina. He served in the US Army from 1954-1955. He married Wanda Blejwas on May 13, 1956 in New Jersey. He received his Masters degree in mechanical engineering from the University of Wisconsin in 1958 and worked for UW-Madison from 1956 until he retired as a Senior Scientist in 2005. He was the 1998 recipient of the John G. Bollinger Award for his contributions to fusion engineering, for developing innovative design solutions for fusion reactors, and for developing methods for recovering lunar resources

Igor loved going on his annual Canadian fishing trip with his work friends and going to his cabin "Pete's Place" in Northern Wisconsin. Igor loved reading and writing poetry. He loved attending his grandchildren's musicals, baseball, soccer, and basketball games.

Calendar

Jan 29-31 Second Meeting of U.S. Academy of Sciences Inertial Fusion Energy Review Committee. Pleasanton, CA
<http://www8.nationalacademies.org/cp/projectview.aspx?key=49265>

Apr 11-14 Workshop on Stochasticity in Fusion Plasmas. Juelich, Germany. <http://www.fz-juelich.de/fsp/>

May 2-4 2011 International Sherwood Fusion Theory Conference. Austin, Texas.

May 9-13 13th International Workshop on Plasma-Facing Materials and Components for Fusion Applications and 1st International Conference on Fusion Materials Science. Rosenheim, Germany. <http://www.ipm.mpg.de/ippcms/eng/for/veranstaltungen/konferenzen/pmfc-13/>

May 15-19 15th International Conference on Emerging Nuclear Energy Systems (ICENES). San Francisco. <http://www.icenes2011.org/>

June 1-3 19th Topical Conference on Radiofrequency Power in Plasmas. Newport, Rhode Island

June 26-30 38th IEEE International Conference on Plasma Science (ICOPS) and the 24th Symposium on Fusion Engineering (SOFE). Chicago. <https://engineering.purdue.edu/ICOPS2011/>



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ITER Director-General Motojima visits Japan to discuss impact of the earthquake on ITER.

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ITER Organization in the midst of ongoing discussions with French safety regulators and local citizen groups.

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U.S. House of Representatives Appropriation Committee issues report on FY2012 fusion budget.

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China announces plans to increase supply of fusion scientists and engineers.

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The U.S. Electric Power Research Institute launches a study to assess the commercial potential of fusion.

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IFMIF Prototype produces first beam as part of the EU-Japan "Broader Approach" Agreement.

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The Omega Laser Facility has a full schedule of operations and requests for user access

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Frank Chen publishes new fusion book with the provocative subtitle "How Fusion Can Save the Planet."

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Bob McCrory is named a vice president of the University of Rochester.

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Steven Cowley is named to the UK Council for Science and Technology by UK Prime Minister David Cameron

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ITER Update

What the Japanese call "the Great East-Japan Earthquake" has caused significant damage to the JAEA Naka Fusion Research Institute, located some 300 kilometres south of the catastrophe's epicentre. Buildings hosting ITER-related activities—notably the Superconducting Coil Test Facility Building, the Gyrotron Test Facility and the MeV-Class Ion Source Test Facility—were badly shaken. As the exact scale of damage is still being fully assessed, entrance to several buildings remains prohibited for safety reasons.

On 21 June, one week after the ITER Council, Director-General Osamu Motojima paid a visit to Naka in order to see for himself the extent of the damage and discuss the recovery plan with Dr. Hiromasa Ninomiya, director general for fusion at Japan's Atomic Energy Agency. Mitigating the consequences of the Japanese situation on the ITER schedule was a key issue in the discussion.

On 21 June, an important meeting relative to ITER's nuclear licensing took place in Fontenay-aux-Roses, outside of Paris. Representatives of the ITER Department for Safety, Quality and Security met with members of the *Groupe Permanent*—the safety advisory body to the French nuclear regulator ASN that is charged with the technical examination of the ITER nuclear licensing files. This was the mid-course meeting of the examination process.

During a presentation on the status of the examination process, the technical advisors to the ASN (IRSN - *Institut de Radioprotection et de Sûreté Nucléaire*) affirmed that the quality of the answers submitted by the ITER Organization and the strict respect of deadlines opened the way for the establishment of the date for the final *Groupe Permanent* at the end of November 2011. This was approved by the French nuclear authorities and the president of the *Groupe Permanent*.

The examination process began back in July 2010. Since then, a thousand questions have been raised by IRSN on the Preliminary Safety Report (RPrS) and there have been three or four meetings per month.

In parallel to activities on a national level, the Local Commission for Information is preparing its final commentary on the creation of the ITER Basic Nuclear Installation (INB) under French law. The Special Working Group created to analyse the ITER data also asked more than 300 questions to members in order to prepare its opinion which will be issued shortly.

On 15 June a five-week Public Inquiry began. During the Public Enquiry, the public has the opportunity to make comments on and ask questions about the ITER project, in particular its environmental impact and safety aspects.

The question of how to improve control of Edge Localized Modes (ELMs) and the vertical stability (VS) of the ITER plasma was one of the key issues addressed in a recent meeting of the ITER Science and Technology Advisory Committee (STAC). Since the Preliminary Design Review performed in October 2011, the in-vessel coil design team led by the Princeton Plasma Physics Laboratory (PPPL) worked with two suppliers from Canada and China to fabricate the largest Stainless Sheath Mineral Insulated Conductor (SSMICC) ever produced in the world. "Because of their proximity to the plasma, conductors with conventional insulation schemes were not an option for the in-vessel coils," says Edward Daly, the mechanical engineer who led the design efforts. The team therefore decided to choose SSMIC for its ability to withstand ITER's high radiation and bake-out temperatures of 200°C.

The sheer scale required for the ELM and VS coils in ITER, however, is much larger than anything produced previously. In June, contracts were awarded to the Institute of Plasma Physics at the Chinese Academy of Science (ASIPP) based in Hefei, China and to Tyco Thermal Controls, Ltd in Ontario, Canada, who both developed prototypes within four months. Once received at PPPL, the prototypes were cut, pushed, pulled, bent, heated, electrified, sliced and x-rayed to evaluate their mechanical and electrical properties. "In general, the conductor samples performed as we had hoped and expected," says Ed Daly. "There were no show-stoppers, but there is still work to do." The results will be used in the final design and prototyping phase, planned to start in July. ASIPP has expressed interest in manufacturing these coils and has proposed collaboration with PPPL.

The first Procurement Arrangement for ITER's Diagnostic Division was signed by ITER Director-General Osamu Motojima and the Head of the Korean Domestic Agency, Kijung Jung. The Procurement Arrangement covers the Neutron Activation System, a technology to measure actual fusion power, and the Vacuum Ultra Violet (VUV) Edge Imaging Spectrometer, which measures the impurities in the ITER plasma. The signature—a symbolic step forward to the challenging journey of ITER diagnostics—took place in a quiet side event during the recent ITER Council meeting in Aomori, Japan.

Neutron Activation Systems (NAS) have delivered reliable results on various existing tokamaks such as TFTR and JET. "The system installed at JET was our reference design," explains Luciano Bertalot from the ITER Diagnostics Division, "which, together with our Korean colleagues, we developed further to adapt to the hotter and harsher conditions on ITER." The improved design is currently being tested on the Korean tokamak KSTAR. And it will be Korea that will ultimately build the NAS system for ITER. "The Korean Domestic Agency, with full responsibility and in close collaboration with the ITER Organization, will do its best to implement the NAS system and to have it built for the fusion power measurement on ITER," said H.G. Lee, on behalf of ITER Korea.

Further information available at <http://www.iter.org>

House Appropriations Report

Despite the strong emphasis in Congress on cutting federal spending, the U. S. House of Representatives Appropriations Subcommittee on Energy and Water has recommended enhanced funding for the fusion energy program. The Subcommittee has recommended to the full Appropriations Committee that funding for the Department of Energy's Office of Fusion Energy Sciences (OFES) be increased \$30,537,000 above this year's level and also be increased by \$6,300,000 above the President's FY 2012 budget request. The Subcommittee's recommendation must be endorsed by the full Committee and the House itself and eventually be merged with a similar measure in the Senate. The Subcommittee's recommendations are as follows:

Fusion Energy Sciences

Fusion Energy Sciences conducts basic science research and experimentation seeking to harness nuclear fusion for energy production purposes. The Committee recommends \$406,000,000 for fusion energy sciences, \$30,537,000 above fiscal year 2011 and \$6,300,000 above the request.

While the National Nuclear Security Administration performs inertial confinement fusion research for nuclear stockpile stewardship, the Office of Science has historically focused on magnetic confinement fusion and other related research. The Committee continues to strongly support magnetic confinement fusion research both as a source of American scientific leadership and expertise, and as a long-term effort to develop a clean energy alternative powered by domestic resources. As a result of the program's sole focus on magnetic fusion en-

ergy, however, the Office of Science's program does not have a broad framework for pursuing research avenues related to inertial fusion energy. In anticipation of achieving ignition at the National Ignition Facility, a critical milestone in the demonstration of inertial confinement fusion's feasibility for energy production, the Department has commissioned a National Academies study assessing the prospects for power generation with inertial fusion energy and identifying obstacles and challenges that will assist in developing a research and development roadmap. The Committee supports this study and encourages the Department to move quickly upon completion of the report to determine a proposed path forward for inertial fusion energy in the event ignition is achieved. Further, the Committee remains concerned that research expertise may be lost while the Department awaits completion of the National Academies study, which is not due until July of 2012.

The Committee urges the Department to fully evaluate existing research capabilities that do not fit easily within the existing weapons-focused inertial and energy-focused magnetic confinement fusion programs, such as krypton fluoride lasers and magneto-inertial fusion, but that may play important roles if an inertial fusion energy program moves forward in future years. The Department should take action to avoid irreversible losses in expertise in these areas before completion of the National Academies study.

The budget request proposes \$105,000,000 for ITER, the first full-scale test reactor for fusion energy. The Committee supports this project as an important step in the development of fusion energy and takes seriously the Department's commitments to international collaborations. However, the Department of Energy's required contribution to ITER is expected to increase substantially in the next several years, and the Committee is concerned that, while funding for ITER will yield important advances to domestic superconductor and other manufacturing capabilities, it may leave little budgetary room to continue supporting critical American fusion science expertise. Further, the Department has not preemptively indicated how it is planning for this impending budgetary challenge, nor has it created a clear prioritization of activities within Fusion Energy Sciences to guide tradeoffs when budgets are tight. The Department is therefore directed to submit a 10-year plan, not later than 12 months after enactment of this Act, on the

Department's proposed research and development activities in magnetic fusion under four realistic budget scenarios. The report shall (1) identify specific areas of fusion energy research and enabling technology development in which the United States can and should establish or solidify a lead in the global fusion energy development effort, and (2) identify priorities for facility construction and facility decommissioning under each of the four budget scenarios. The Department is encouraged to use a similar approach adopted by the Particle Physics Project Prioritization Panel that developed a 10-year strategic plan for the Department's high energy physics program

Inertial Confinement Fusion and High Yield

(Within the NNSA) the Committee recommendation provides \$471,174,000 for the Inertial Confinement Fusion and High Yield Campaign, \$6,427,000 below fiscal year 2011 and \$5,100,000 below the budget request. Within these funds, \$62,500,000 shall be for the Laboratory for Laser Energetics as requested. The recommendation includes \$4,000,000 for the Joint Program in High Energy Density Laboratory Plasmas, the same as fiscal year 2011 and \$5,100,000 below the budget request.

The Committee continues to support the National Ignition Facility (NIF) and urges the NNSA to maintain its schedule towards achieving fusion ignition. The Committee recommendation includes the full request to pursue ignition at NIF and to perform supporting weapons-related experiments on its pulsed power facilities. The Committee notes that NIF is already contributing to stockpile stewardship through experiments which ensure the aging nuclear weapons stockpile continues to be safe, secure and effective without nuclear testing.

China To Accelerate Training of Fusion Personnel

China is planning to train 2,000 skilled experts during the next 10 years to lead the nation's exploration of magnetic confinement fusion (MCF), said the Ministry of Science and Technology. "China is trying to dispatch more qualified scientists to work on the International Thermonuclear Experimental Reactor (ITER) in France," said Cao Jianlin, vice-minister of science and technology. China contributes 10 percent of the funding for the multi-billion-dollar project but is only supplying 5 percent of the scientists working on the initiative. Among the 21

Chinese people currently taking part in the project are 17 in skilled positions and four in management roles, according to the latest data released by the ministry. "We urgently need to build a system for training researchers in both universities and institutes nationwide," Cao said. A total of 1,254 researchers are involved with MCF-related projects in China, he added.

The ITER Agreement, signed in November 2006, came into effect in October 2007 and has an initial duration of 35 years, although it can be extended for an additional 10 years. The United States and the Soviet Union initiated the ITER project in the mid-1980s and China has participated since February 2003. Chinese engineers and scientists will be responsible for building components, such as heating, diagnostic and remote maintenance equipment, as well as transporting it to Cadarache in the south of France, where ITER is being built. "The ITER is related to 34 core scientific engineering technologies and management subjects," Wan Yuanxi, dean of the school of nuclear science and technology under the University of Science and Technology of China. "Chinese researchers only work on 11 of them, which means we have no involvement in more than 60 percent of its core scientific engineering technologies and management subjects."

EPRI Initiates Fusion Review

The Electric Power Research Institute (EPRI) will initiate a an "assessment of the potential for fusion energy power production" with a by-invitation-only workshop July 19-21 at its Palo Alto, CA headquarters. EPRI says it will "review the status of each of the most significant fusion energy power initiatives and identify the challenges which each must overcome before that technology can be commercialized."

The workshop will include presentations to a group of EPRI advisors in the areas of tokamaks (Princeton, General Atomics and UCSD), magnetized target fusion (General Fusion), colliding field reversed configurations (Helion Energy), laser fusion (LLNL and NRL) and fusion-fission hybrids (U.Texas and Georgia Tech).

Further information on the review is posted at <http://fire.pppl.gov>. Persons wishing to inquire further about the review should contact:

Tom Mulford at tmulford@epri.com

IFMIF Prototype Accelerator Produces First Beam

Developing materials resistant enough to withstand the high-power impact of the neutrons from deute-

rium-tritium (DT) reactions is of utmost importance for the future of fusion. This task has been assigned to the International Fusion Materials Irradiation Facility (IFMIF) which is presently in the Engineering Validation and Engineering Design Activities (EVEDA) phase. The project is part of the Broader Approach that Japan and the European Union formally launched in 2007. IFMIF is coordinated from Rokkasho, in northern Japan, and headed by Pascal Garnin, formerly of CEA's Institute for Magnetic Fusion Research (IRFM) and Agence Iter France

In the future IFMIF plant, whose location has not yet been decided, two coupled accelerators will each deliver a deuterium (deuterium ion) beam of 125 mA at 40 MeV in continuous wave to a lithium loop. The interaction of the accelerated deuterons with the liquid lithium in the loop will generate neutrons similar to those produced in the DT fusion reactions. These neutrons will in turn irradiate reduced-scale samples of material to be tested, and other experiments in specific modules.

Construction of the EVEDA Lithium Test Loop (ELiTe) was completed in December 2010 at the JAEA Oarai Centre, Ibaraki prefecture. The installation was mildly affected by the 11 March 2011 earthquake - "Nothing really serious," says Garnin — and its piping systems will require some checking before operations can resume.

Ten thousand kilometres from Rokkasho, at CEA Saclay in the Paris region, work on the scale 1:1 prototype accelerator, now officially named LIPAc (Linear IFMIF Prototype Accelerator), reached an important milestone. The defining moment occurred in the evening of 4 May 2011, when the installation's injector produced its first proton (hydrogen) beam. CEA's Raphaël Gobin, in charge of the injector design, manufacture and experiments, announced that—after the successful generation of a first plasma in the ion source a few days before—the first beam was measured in the specific block-house built for this occasion. This first beam was in pulsed regime whereas the final one will be continuous.

During the EVEDA phase, only the low energy section, which is the most challenging one, will be tested: the beam energy will reach 9 MeV at the end of the first cryomodule, while in IFMIF three extra cryomodules will bring the energy to 40 MeV that is required to optimize the production of neutrons.

"LIPAc is the accelerator of all records," explains Pascal Garnin. "In terms of intensity, we're above the present state-of-the-art by a factor 100 and the en-

ergy of the prototype will be among the highest in the world, even higher than SNS in Oak Ridge."

In the actual IFMIF installation, the 40 MeV deuterium ions will generate an accumulated neutron flux (the "fluence") a hundred times that of ITER, and slightly above that of the future DEMO. The target samples will hence "age" some 20 to 40 percent faster than in an actual steady-state fusion reactor - a unique case of a particle accelerator that also accelerates time.

The above was excerpted from an article written by Robert Arnoux published in the ITER Newslines

Omega Laser Operations

The Omega Laser Facility at the University of Rochester conducted 159 target shots in April (140 on the OMEGA laser and 19 on OMEGA EP). The average experimental effectiveness was 97.5% (97.9% for OMEGA and 94.7% for OMEGA EP). Seventy-six target shots were taken for the National Ignition Campaign (NIC) program by experimental teams led by scientists from LANL, LLNL, and LLE.

Forty-nine target shots were conducted for the High Energy Density (HED) physics program and led by scientists from LANL and LLNL. The National Laser Users Facility (NLUF) program accounted for 24 target shots for the two experimental teams led by the University of Michigan and the University of Nevada, Reno. Ten other target shots were taken for Laboratory Basic Science (LBS) experiments led by scientists from the U. Rochester.

A record 40 proposals were submitted in response to this year's solicitation for LBS proposals for experiments to be conducted at the Omega Facility in FY12. The LBS program is open to scientists from the ICF laboratories (LLNL, LANL, SNL, and LLE) who wish to conduct basic high energy density science experiments at the facility. Up to 15% of the facility time is available for this program. This year's submissions represent a 74% increase over those submitted in FY11. A total of 87.5 shot days at the Omega Facility was requested—over three times the shot days available for this program (27 days). A committee comprised of experts in high-energy-density physics from academia and national laboratories reviewed and ranked the proposals.

For further information contact John Soures: jsou@l1e.rochester.edu

Frank Chen Book on Fusion

Francis F. Chen, Professor Emeritus, Electrical Engineering Department, UCLA, has published a book with the provocative title: *An Indispensable Truth: How Fusion Power Can Save the Planet* (Springer) It can be ordered (\$49.95) or viewed online at <http://www.springer.com> and search on the author's name or on ISBN 978-1-4419-7819-6. It can also be ordered from Amazon.

In addition to being a fairly comprehensive treatment of fusion research and its status, the 433-page book also treats climate change, and other energy sources. In the book's preface, Chen states:

"Most legislators and journalists have regarded fusion as a pipe dream with very little chance of success. They are misinformed, because times have changed. Achieving fusion energy is difficult, but the progress made in the past two decades has been remarkable. Mother Nature has actually been kind to us, giving us beneficial effects that were totally unexpected. The physics issues are now understood well enough that serious engineering can begin. An Apollo 11-type program can bring fusion online in time to stabilize climate change before it is too late." About the book, Chen says:

1. For the general public and students, it presents the evidence that climate change is caused by mankind and what we can do about it.

2. For the general public, students, and environmentalists, it discusses the reserves of fossil fuels, the pollution caused by their use, mitigation methods, and attempts to extract the last of them.

3. For the general public and students, "green" energy sources such as wind, solar, and nuclear are explained, giving their pros and cons and their energy payback times. Hydrogen and electric cars are included. For scientifically-minded readers, the physics of how each source works and the forefront of research are given in some detail.

4. For the general public, plasma fusion for energy is explained ab initio, with no assumption of previous scientific knowledge. There is a little history and an insight into the possibilities. The science of magnetic fusion is then treated in detail for physicists, science buffs, and students.

5. For policymakers and engineers, there is an exhaustive treatment of fusion technology, ending with a financial analysis of fusion development. The data are of the type that will help political leaders make informed decisions on energy policy.

6. For dreamers, the types of fusion reactors possible in the far future are described which will give mankind an inexhaustible supply of safe and clean energy.

Frank can be reached at ffchen@ee.ucla.edu

Bob McCrory Named Rochester Vice President

Robert McCrory, director of the University of Rochester's Laboratory for Laser Energetics (LLE) has been named vice president of the University of Rochester, on the recommendation of President Joel Seligman and with the approval of the University's Board of Trustees at its May meeting.

McCrory is director of the University's largest single research program, with an annual budget of approximately \$65 million and approximately 350 employees. In addition to its leading role in the national effort to demonstrate the feasibility of fusion power plants, LLE has a strong academic component both inside the University and in its relationships with other laboratories and universities. Over the years, more than 800 university students have received training at LLE and more than 200 have received doctoral degrees. Given the laboratory's strong academic role, McCrory will retain his current title of vice provost, as well as his academic titles in engineering and physics, while also serving as vice president. He will continue as a member of the President's Cabinet.

"The Laboratory for Laser Energetics is a key component of our nation's scientific capital and leadership, a vital component of our work toward an independent energy future, and a significant contributor to the local economy," Seligman said. "Bob McCrory has done an outstanding job in leading the Laser Lab for more than 25 years, and I look forward to continuing to work closely together for many years to come." Provost and Executive Vice President Ralph Kuncel said. "Few people are both vice provost and vice president. But few people have the range of strategic responsibilities managed by Bob McCrory. As vice provost, Bob will continue to have the authority needed for his academic roles. And as vice president, his title now reflects accurately both in Washington and to the industrial community the leadership role he plays at the laboratory and in the University more generally."

McCrorry received his B.Sc in physics (1968) and his Ph.D in applied plasma physics (1973) from MIT. He came to the University as a staff member at LLE in 1976. He was appointed to the faculty in 1984 where he is currently professor of mechanical engineering and professor of physics and astronomy.

He has made numerous contributions to inertial fusion research. He was awarded the 1995 Edward Teller Medal for his pioneering research and leadership in the use of lasers for controlled thermonuclear fusion. He has served on the Director's Advisory Committee for Lawrence Livermore National Laboratory and as a consultant to the Los Alamos National Laboratory. He was elected a Fellow of the American Physical Society in 1985, and in 2004 he was elected a Fellow of the American Association for the Advancement of Science. He was a recipient of Fusion Power Associates 1996 Leadership Award and is a member of Fusion Power Associates Board of Directors.

He can be reached at rmcc@lle.rochester.edu

Cowley Named to UK Council for Science and Technology

UK Prime Minister David Cameron has appointed Professor Steven Cowley, CEO of the United Kingdom Atomic Energy Authority, as a member of the Council for Science and Technology.

The Council for Science and Technology is the UK Government's top-level advisory body on science and technology policy issues. It is made up of figures from senior levels in science and engineering fields from industry, business and academia, and reports directly to the Prime Minister.

The announcement noted that Steven Cowley is a theoretical physicist who has been CEO of the UK Atomic Energy Authority since 2009. The Authority operates Culham Centre for Fusion Energy, near Oxford, "which is developing nuclear fusion as a large-scale, low-carbon energy source for the future."

Before joining the Authority, Steven Cowley was a professor at the University of California Los Angeles and led the plasma physics group at Imperial College, London, where he remains a part-time professor. He has published over 140 papers and articles during his scientific career.

Professor Cowley said: "The quality of the UK's science and technology is second to none and our future prosperity depends on it. I am honoured to serve on a Council dedicated to enhancing UK science

and technology." He can be reached at steve.cowley@ukaea.org.uk

All US National Academies Report PDFs Now Free on Web

As of June 2, all PDFs of reports that are currently for sale on the US National Academies Press website and PDFs associated with future reports will be offered free of charge to web visitors.

<http://www.nap.edu/>

Among 4,000+ titles, this includes all Board on Physics and Astronomy (BPA) reports, such as the following:

Plasma 2010:

http://www.nap.edu/catalog.php?record_id=11960

Selling the Nation's Helium Reserve:

http://www.nap.edu/catalog.php?record_id=12844

A list of all completed BPA reports can be found at URL

http://sites.nationalacademies.org/BPA/BPA_048094.

Small UK Fusion Company Gets Funding Boost

A small company in the United Kingdom, Tokamak Solutions, has just won £170,000 of funding from a group of equity investors that includes Oxford Instruments, angel network Oxford Early Investments and government-backed Rainbow Seed Fund.

Tokamak Solutions (TS) is currently designing machines, based on fusion science, aimed at tackling some of the world's most urgent, universal energy problems, such as how to dispose of toxic nuclear waste, in simpler and more cost-effective ways than are currently available. "Part of our challenge has been to be taken seriously, given the boldness of our original ideas," says physicist Dr David Kingham, one of three founders who set up TS two years ago. Dr Mikhail Gryaznevich and Alan Sykes joined forces with Kingham to develop different kinds of smaller tokamaks to use for plasma research and also as neutron sources.

Based in the Culham Innovation Centre, Abingdon in Oxfordshire, the new investment will enable the firm now to commercialise its compact version and extend the ways its technology can be applied. Its devices, which can scale from two-metres wide right up to the size of a small room, use a different production method to that of their costly counterparts. This is based on injecting a high-energy beam

into warm, modest amounts of plasma within a spherical tokamak, the shape of a cored apple, the advocates say

Now, in a further boost, Tokamak Solutions has just won a £110,000 contract to contribute to ITER, Europe's large-scale fusion creation project based in France. "Most fusion efforts are directed at the long-term problem of producing electricity from this method," says Kingham, adding "However our dramatic breakthrough has been finding a way of making fusion useful in the medium term. There really is no limit to where our technology can go in future."

More information can be found at <http://www.tokamakolutions.co.uk>

Report Maps California's Energy Future to 2050

California emissions levels will drop to 80 percent below 1990 levels through technology and practices already in use, available, and some currently being developed, according to a report from the California Council on Science and Technology (CCST) "California's Energy Future — The View to 2050" looks a generation ahead at what it will really take to reach emissions goals. The report demonstrates the ability of cutting-edge technology to make lower emissions a reality.

The report finds that the technology necessary to do more with less – the ability to produce the electricity and fuel California needs with a total reduction in harmful emissions – is either already in use or in demonstration and close to being market ready. The report states that the positive economic benefit and job creation opportunities stemming from the use of technologies described in the report will maintain California's competitive edge. The state is already an international leader in the development of breakthrough, game-changing technology that could dramatically change outcomes, especially beyond 2050. California currently leads the world in developing fuel from sunlight and in the prospect of using fusion to produce safe energy without resulting in a large problem with nuclear waste.

The full report is available at <http://www.ccst.us/>

Calendar

July 14-24 49th Course: Atoms and Plasmas in Super-Intense Laser Fields. Erice, Italy.
<http://supererice2011.org/index.php>

July 28 Public Meeting of DOE Fusion Energy Sciences Advisory Committee (FESAC). Gaithersburg (MD) Hilton.

Contact: albert.opdenaker@science.doe.gov

Aug 16-19 Innovative Confinement Concepts Workshop (ICC2011).
<http://www.iccworkshops.org>

Sep 11-16 10th International Symposium on Fusion Nuclear Technology. Portland, Oregon.
<http://www.isfnt-10.org>

Sep 12-14 International Topical Conference on Plasma Science Lisbon, Portugal
<http://www.ipfn.ist.utl.pt/itcps>

Sep 19-21 13th International Workshop on Plasma Edge Theory in Fusion Devices. South Lake Tahoe, CA. <http://pet13.llnl.gov>

Sep 26-30 Summer University on Plasma Physics and Fusion Research. Greifswald, Germany
<http://www.ipp-summeruni.info/>

Sep 27-30 16th International Workshop on Spherical Torus. Toki, Japan
<http://istw2011.nifs.ac.jp>

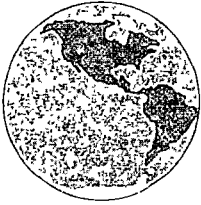
Oct 9-13 15th International Symposium on Laser-aided Diagnostics Jeju, Korea
<http://lapd15.postech.ac.kr/>

Oct 10-12 13th International Workshop on H-Mode Physics and Transport Barriers. Oxford, UK
<http://www.jet.efda.org/2011-h-mode-workshop/conference-venue/>

Oct 16-21 15th International Conference on Fusion Reactor Materials (ICFRM-15). Charleston, South Carolina, USA
<http://ms.ornl.gov/ICFRM15/index.shtml/>

Nov 14-18 53rd APS Division of Plasma Physics Annual Meeting. Salt Lake City, Utah, USA.
<http://www.aps.org/meetings/meeting.cfm?name=DPP11/>

Dec 14-15 Fusion Power Associates 32nd Annual Meeting and Symposium. Washington, DC.
<http://fusionpower.org>



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Complete Coverage Of Worldwide Fusion Developments

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SLANTS & TRENDS

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US Senate Appropriations Committee marks up FY 2012 fusion budget.

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US ITER Project Office awards ITER cooling system contract to AREVA Federal Services, Inc

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Jeff Quintenz, former head of inertial fusion at Sandia National Laboratories, takes over as head of USDOE inertial confinement fusion office.

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Norm Augustine publishes article on the importance of fusion to society

See Story on page 45

Princeton Hosts International Workshop on Magnetic Fusion Energy Roadmapping and posts presentations

See Story on page 46

The ITER Organization has published and posted its 2010 Annual Report, highlighting the adoption of the ITER design baseline and the beginning of construction activity on the platform

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Frank Bieniosek, key scientist in the Heavy Ion Fusion program at the Lawrence Berkeley National Laboratory, has passed away.

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Motojima Summarizes ITER Status

ITER Director General Osamu Motojima has published the following statement in the October 26 issue of the ITER Newslime.

The month of October is always a busy time for the ITER Organization, as the project's two top advisory bodies—the Science and Technology Advisory Committee (STAC) and the Management Advisory Committee (MAC)—convene here in Cadarache for their semi-annual meetings. This is where the performance of the Organization is benchmarked. The Committees' appraisal of our decisions and actions is very valuable to us. Over time, these advisory committee meetings have greatly helped us to evolve. This time, the main focus of the discussions was on our strategy to address and mitigate potential delays, both caused by the earthquake in Japan, but also from late handover or incompleteness of design work and delayed procurement arrangement signatures.

In order to recover unsatisfactory schedule performance, a Special Task Group was established immediately after the last ITER Council meeting in June 2011. The Task Group, which I chair, involves representatives from the seven ITER Members on both a technical and political level. Since its implementation we have had six meetings. The result of the work done by this Task Group is that we now have a design completion process which is substantially different from our previous processes. We have also considerably simplified our planning and scheduling strategy in order to facilitate more rapid progress.

One of the issues discussed at STAC was the Central Solenoid conductor. Latest test results showed that the conductor's performance has significantly improved with respect to the tests carried out at the end of 2010 but still does not fully meet the specification. Our proposal is to use this conductor in the lower Central Solenoid module, for this module, the expected loads are low enough to assure the lifetime of that coil.

Regarding the cold testing of the Toroidal Field coils, the STAC will recommend to the ITER Council that all coils be tested at 77 Kelvin. In Japan, where an ongoing risk analysis may demonstrate sufficient confidence in the performance of the toroidal field coils without cold testing, a different strategy may be followed. MAC has therefore asked me to review the ITER Organization's strategy and to work with the Japanese Domestic Agency to achieve a plan that assures sufficient confidence. It genuinely falls within the responsibility of MAC to balance any technical risks

against cost, schedule and funding risks. But let's be reminded that one variable in this equation is absolutely inflexible: We must not overstep the construction cost ceiling requested by the ITER Council. To do so would need a tremendous effort to assure continued funding for the ITER project.

With the present knowledge of the project's costs and construction schedule, it is evident that to meet that goal, it will be necessary to defer a number of subsystems and components to the Operation Phase, and to pay for those items by a reduction in other operational costs. The only item of sufficient value to accomplish a sufficient reduction in the operations budget in the early years of the operation phase is the second divertor. In short, we can no longer afford to pursue two different designs. The plan is thus to begin operations with a tungsten divertor from the start, instead of a carbon-fiber divertor for the beginning of operations and a tungsten divertor for deuterium-tritium operation in 2027.

Even though I and the experts within the ITER Organization are confident that the risks associated with a tungsten divertor right from the commission phase are manageable, we have not reached a unanimous position among the ITER Members on this issue. It may be that we have to postpone this decision and to continue work on both technologies to resolve the remaining technical problems and risks. Further deferrals include some of the heating systems, specific diagnostics, hot cell tools and tritium plant systems. In total, these deferrals amount to more than EUR 200 million. These important issues will next be discussed at the ninth ITER Council on 17-18 November.

Senate Appropriations Committee Marks Up FY12 Budget

The Senate Appropriations Committee has marked up the U.S. Department of Energy's FY 2012 budget request, including funds requested for the Office of Fusion Energy Sciences (OFES) and for NNSA's Inertial Confinement Fusion Ignition and High Yield Campaign. The mark must still be approved by the full Senate and then go to conference with a similar bill passed by the House of Representatives to resolve differences in the two bills before a final vote for passage in both houses. However, many observers believe that the government will go on "continuing resolution" (which holds spending at FY 2011 levels) until overall federal budget deficit issues are resolved and then that the Congress will pass one "omnibus" FY 2012 federal budget instead of a large number of individual bills.

Under the bill, the OFES would receive \$335,464,000 compared to the FY 2011 level of \$375,463,000. The President's FY 2012 request was for \$399,700,000. The House-passed bill (see FPA11-29) would provide \$406,000,000. The NNSA Inertial Fusion program would receive \$476,274,000 compared to \$464,747,000 in FY 2011 and equal to the President's request. The House-passed bill would provide \$471,174,000.

The report language is reproduced below.

FUSION ENERGY SCIENCES
The Committee recommends \$335,463,000 for Fusion Energy Sciences. The Department is directed to submit a 10-year plan, not later than 12 months after enactment of this act, on the Department's proposed research and development activities in magnetic fusion under four realistic budget scenarios. The report shall (1) identify specific areas of fusion energy research and enabling technology development in which the United States can and should establish or solidify a lead in the global fusion energy development effort and (2) identify priorities for facility construction and facility decommissioning under each of the four budget scenarios. The Department is encouraged to use a similar approach adopted by the Particle Physics Project Prioritization Panel that developed a 10-year strategic plan for the Department's high energy physics program.

Of the \$24,741,000 requested for the High Energy Density Laboratory Plasma program, \$12,000,000 shall be spent on heavy-ion fusion, laser-driven fusion, and magneto-inertial fusion to be evenly distributed among these three areas of science. A recent Department of Energy report on scientific grand challenges for fusion energy sciences identified these three areas of research as critical to advancing inertial fusion energy. In particular, the Committee does not understand why the Department would redirect funding for magnetized high-energy-density plasma research after the panel report found that this approach has the potential to significantly reduce power requirements compared to conventional inertial confinement fusion and could permit fusion development without building multi-billion dollar facilities.

The Committee is concerned about the impact ITER will have on the domestic fusion energy budget. Based on DOE budget estimates, DOE will be requesting between \$300,000,000 to \$400,000,000 a year from fiscal years 2014 through 2016 to help build ITER. If current trends of declining or flat budgets continue, almost all of the fusion energy sciences budget will be consumed by ITER. The Committee encourages DOE to find a

solution to this problem without compromising the scientific and technical expertise residing at U.S. universities, labs, and industrial partners.

The Committee encourages the Office of Fusion Energy Sciences Program to closely collaborate with the Office of Basic Energy Sciences, the Office of Advanced Scientific Computing Research, the Office of Nuclear Energy, and the National Nuclear Security Administration to address mutual needs for technology development in magnetic fusion, inertial fusion, and next-generation fission reactor concepts. One focus area of these collaborations should be on identifying, characterizing, and developing new materials that can endure the intense neutron and heat fluxes expected in these reactor environments. The Committee expects the Department to consider these nuclear technology needs as it develops its prioritization plan.

The Committee also encourages the fusion energy program to continue taking advantage of high performance computing to address scientific and technical challenges on the path to fusion energy. The Committee supports the Fusion Simulation Program to provide experimentally validated predictive simulation capabilities that are critical for ITER and other current and planned toroidal fusion devices. Given current and future budget constraints, the Committee views this initiative as critical to maintain U.S. world leadership in fusion energy in a cost-effective manner.

Inertial Confinement Fusion Ignition and High-Yield Campaign—The Committee recommends \$476,274,000 as requested. Within these funds, at least \$62,500,000 and \$48,000,000 shall be used for inertial confinement fusion activities at the University of Rochester's Omega facility and Sandia National Laboratory's Z facility, respectively. The Committee encourages NNSA to increase pulsed power capabilities at the Z facility by increasing available current and attainable pressures and radiation, especially for new radiographic capabilities. The Committee also recommends at least \$5,000,000 as requested for the Naval Research Laboratory to continue operating laser facilities focused on laser plasma interactions, target hydrodynamics, and materials issues which are important for ignition. The Committee recognizes and supports the important work of medium scale laser facilities such as Trident at Los Alamos National Laboratory, Jupiter at Lawrence Livermore National Laboratory, and Nike at the Naval Research Laboratory to provide independent peer review of experiments at larger scale facilities, such as the National Ignition Facility, and help resolve scientific barriers to achieving ignition.

The Committee recognizes the National Ignition Facility's important contribution to resolving a critical stockpile stewardship issue related to radiation transport. Scientists used the National Ignition Facility to conduct non-ignition experiments, which do not require using the full capability of the facility, to achieve temperatures and pressures that exceeded any other facility and address one of the largest sources of uncertainty in calculating weapon performance. These experiments validated physics-based models and increased NNSA's confidence in assessing the safety, security, and reliability of the stockpile. Despite this success, the Committee remains concerned about NNSA's ability to achieve ignition—the primary purpose of constructing the facility—by the end of fiscal year 2012 when the National Ignition Campaign ends and the facility should transition to regular ignition operations and pursues broad scientific applications. The Committee directs NNSA to establish an independent advisory board by January 1, 2012 that can evaluate experiments planned at the National Ignition Facility pre- and post-ignition, identify potential weaknesses with the experimental plan, and recommend, if necessary, alternative approaches to address scientific and technical challenges. The Committee also strongly supports the advisory committee's role in setting a strategic direction for inertial confinement fusion and high-energy density physics research and determining how best to use current facilities to advance this scientific field. If the National Ignition Facility does not achieve ignition by the end of fiscal year 2012 using a cryogenically layered deuterium and tritium target that produces a neutron yield with a gain greater than 1, the Committee directs NNSA to submit a report by November 30, 2012 that (1) explains the scientific and technical barriers to achieving ignition, (2) the steps NNSA will take to achieve ignition with a revised schedule, and (3) the impact on the stockpile stewardship program.

The Committee commends NNSA for taking the first steps in soliciting competitive bids for its full portfolio of target fabrication contracts. The Committee encourages NNSA to consider various criteria when awarding contracts, such as the extent to which the contract spurs innovation, lowers costs, reduces technical risk, and maintains a competitive multi-vendor market to avoid relying on one contractor for all future target fabrication needs. The Committee also encourages NNSA to take advantage of existing and presently underutilized fabrication capabilities to meet increased demands for targets rather than developing and building new infrastructure. The Committee also urges NNSA to develop a long-term plan that assesses the demand for targets for inertial confinement fusion facilities that support the stockpile stewardship program

and identifies ways to meet that demand without significant cost increases.

AREVA Awarded U.S. ITER Contract

The US ITER Project Office at the US Department of Energy's (DOE) Oak Ridge National Laboratory has awarded a \$13.2 million task order to AREVA Federal Services for fabrication of five drain tanks for the ITER tokamak cooling water system. To date, US ITER has awarded more than \$260 million in contracts to US industry, laboratories and universities in 38 states and the District of Columbia.

Based in Charlotte, North Carolina, AREVA Federal Services was competitively selected for award of a basic ordering agreement for the design and fabrication of the tokamak cooling water system in 2009. The tanks will be manufactured in Camden, New Jersey, by Joseph Oat Corporation, a privately held family business founded in 1788.

The drain tanks will be among the first equipment installed inside the ITER tokamak building. The tanks must be delivered by January 2014 to southern France, where ITER is under construction, in order to ensure installation access. Because of the size of the tanks—up to 20 feet in diameter and 29 feet high, with a volume of over 60,000 gallons each—they cannot be installed after the building walls and floors are completed.

Jeff Quintenz to Head ICF Office

Dr. Jeff Quintenz became Director of DOE NNSA's Office of Inertial Confinement Fusion (ICF) effective September 25. Jeff retired from Sandia National Laboratories in 2010 after 34 years of service. His most recent position there was as Director of the Facilities Management and Operations Center. However, Jeff has had a long association with inertial confinement fusion.

After receiving his Ph.D. in Electrical Engineering from the University of Arizona in 1975, Jeff joined Sandia as a member of the Plasma Theory Division. He performed research on the physics of high power electron and ion beams and pulsed power accelerators and, in 1993, became manager of Sandia's Inertial Confinement Fusion Program. In 1999, he became Director of the Pulsed Power Sciences Center, with responsibilities that included the ICF Program, high energy density physics, dynamic materials science, high energy and high power laser physics and other related areas.

In 2004, Jeff left his fusion responsibilities to become President of Lockheed Martin Nevada Technologies, Inc and Deputy General Manager for the Stockpile Stewardship Program and Operations of Bechtel Nevada. In 2006, Jeff returned to his most recent post at Sandia.

He is the author or co-author of more than 80 publications and co-author of two book chapters on intense particle beams. He is a Fellow of the IEEE and a former member of Fusion Power Associates Board of Directors.

He can be reached at jeffrey.quintenz@nnsa.doe.gov

Norm Augustine on the R&D Gap

Norm Augustine, American Security Project, published the following article in the September 2, 2011 edition of The Hill.

America is in grave danger of losing its edge. For over one hundred years, American leadership in science, technology, engineering, and manufacturing has been unrivaled. It has created for us not only one of the highest standards of living any civilization has ever achieved, but also brought American preeminence in the world and a strong national defense. Now, unfortunately, this is all at risk due to the lack of long-term planning, little political will, and slowing investment in science and engineering research.

As every business leader knows, prosperity tomorrow requires investment today. This is true whether the economy is in a period of boom or bust. The United States will not simply "grow" its way out of economic malaise. We need a rebirth of innovation, new products, new ways of doing things, new scientific achievements.

Let's look at the facts about research and development (R&D). As a percentage of GDP, the U.S. ranks eighth, behind countries like Japan, South Korea, and even Iceland. In one of the most important areas—energy—in 2010 the Department of Energy invested just \$2.27 billion on applied R&D, or just slightly more than 1/100th of one percent of GDP. As a point of comparison, that's nearly \$1 billion less than the amount (\$3.1 billion) we'll spend in 2011 providing a tax benefit for employee parking.

R&D is not the only area where we are falling behind. Over the past two decades there has been an 18 percent decline in the number of students graduating with bachelor degrees in engineering, math, physics and geosciences in the United States.

In 1986, the United States had 52 percent of the global doctorates in science and engineering. By 2003, that number dropped to a staggering 22 percent. The U.S. ranks 17th among developed nations in the proportion of college students receiving degrees in science or engineering. It was 3rd just three decades ago. To give a real-time example of why this matters, in the fourth quarter of 2010, 20 percent of our trade deficit was created by advanced technology, making it the largest deficit contributor. In that year, the advanced technology trade deficit worsened by \$82 billion.

While our investment in our future falls, other nations have learned from the American way, and drastically increased their R&D. China is investing in science, engineering, manufacturing, energy and transportation. China plans to spend \$1.5 trillion in seven strategic sectors, including alternative energy, alternative fuel cars, and high-end equipment manufacturing (including high-speed rail and aviation). It now dominates the United States in the manufacture of clean energy technologies. China has leaped over its global competitors, both in the United States and in Europe, in the making of wind turbines and solar panels. China invested \$34.6 billion in clean energy in 2009, in the U.S. it was just \$18.6 billion. Why do we wonder why China's economy is growing so fast?

Fortunately, this isn't how the story has to end. America can control its own destiny. But to do so, we must increase our investment—both public and private—in R&D. America has done this before. It put a man on the moon within a decade of the challenge to do so; it built the atomic bomb to help win the Second World War, and it built a waterway to connect the Atlantic and Pacific oceans. This new investment should be centered on our transportation networks and next-generation energy technology.

Today, there are scientists working on fusion power in many nations. Fusion power would be a safe, affordable, clean, and sustainable energy. Many scientists believe that an investment of \$35 billion over 10 years would build two pilot plants to move forward with commercialization of fusion power over the next 30 years. Other nations—China and South Korea—are eager to win the race for commercialization of fusion. If we don't set a national priority ourselves, we are in danger of losing this race, too.

If we recommit ourselves to science, technology, engineering, and manufacturing, we will lay the foundations to future growth and a secure American future. The alternative is not one that is pleasant to contemplate.

Norm Augustine is a board member of the American Security Project. He was chairman of the Council of the National Academy of Engineering, president and chairman of the Association of the United States Army, chairman of the Aerospace Industries Association, and chairman of the Defense Science Board.

Source:

<http://thehill.com/blogs/congress-blog/technology/179367-the-research-and-development-gap>

International Workshop on MFE Roadmapping in the ITER Era

An International Workshop on MFE (Magnetic Fusion Energy) Roadmapping in the ITER Era was held at Princeton University September 7-10. Approximately 70 persons from the US, Germany, India, China, Japan, Korea, France and Russia attended.

The goal of the Workshop was "to foster an international technical discussion of the science and technology issues and prerequisites for a Demonstration Power Plant (Demo), and the missions, requirements, and risk tradeoffs for major nuclear facilities, including ITER, on the path to Demo"

The presentations, including final summary presentations, are posted at <http://advprojects.pppl.gov/roadmapping>

ITER Organization Issues 2010 Annual Report

Once a year, the ITER Organization issues an Annual Report. The 2010 annual report describes the ITER Organization's fourth full year of operation. It highlights the adoption of the ITER Baseline, the nomination of the second Director-General in the history of the Organization, and the beginning of construction activity on the platform, all dating back to a pivotal extraordinary session of the ITER Council in July 2010. The report also describes the progress made in the areas of the ITER licensing procedure, design completion, procurement, and the manufacturing in all Member countries.

The report can be accessed at <http://itei.org>

Frank Bieniosek passes away

Frank Bieniosek passed away on October 20, 2011. He joined LBNL's Accelerator and Fusion Research Division in November 1998 as an accelerator physicist working on heavy ion beam accelerators for heavy ion fusion. He applied his extensive experience from prior work at the Fermi National

Accelerator laboratory to develop beam diagnostics, which were used to achieve reliable operation of LBNL's High Current Experiment (HCX).

Frank's recognized expertise in diagnostics and his keen insight in interpreting complex data well-qualified him to become task leader for High Energy Density Physics (HEDP) Targets in a 2005 reorganization of the US Heavy Ion Fusion Virtual National Laboratory. Frank pioneered development of the first HEDP target chamber using intense nanosecond beams in the Neutralized Drift Compression Experiment (NDCX-I) facility at LBNL.

Frank was a gifted experimentalist who was highly respected by all scientists in the HIFS-VNL, and was an inspiration to his team members and colleagues. He will be sorely missed by all his co-workers and collaborators around the world.

His wife Edith and two children survive Frank. Condolences may be sent via B Grant Logan, Director, US HIFS-VNL bglogan@lbl.gov

Calendar

Nov 14-18 53rd APS Division of Plasma Physics Annual Meeting. Salt Lake City, Utah. <http://www.aps.org/meetings/meeting.cfm?name=DPP11>

Nov 26 – Dec 1 4th Workshop in Plasma Technology Applications. Cairo, Egypt. <http://www.aucpt.org/>

Nov 28-30 2nd International Conference on Frontiers in Diagnostics Techniques Frascati, Italy <http://fdt2.frascati.enea.it/>

Dec 14-15 Fusion Power Associates 32nd Annual Meeting and Symposium. Washington, DC. <http://fusionpower.org>

Jan 29-Feb3 2012 Joint International Stellarator/Heliotron Workshop and 10th Asia Pacific Plasma Theory Conference <http://hlnf.anu.edu.au/Plasma2012/>

February 29 Fusion Day 2012 in Washington, DC Contact jgroenin@princeton.edu

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This is to certify that the annexed advertisement of PUBLIC NOTICE THE ANNUAL REPORT OF FUSION POWER ASSOCIATES FOR THE CALENDAR YEAR ENDING DECEMBER 31, 2011, IS AVAILABLE was published in the Gaithersburg Gazette newspapers, a weekly newspaper published in Montgomery County, Maryland. The Ad appeared once a week for one week, before 2/24/12.

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The annual report of Fusion Power Associates for the Calendar Year ending December 31, 2011, is available during normal business hours at 2 Professional Drive, Suite 249, for inspection by any citizen who so requests within 180 days thereof. Stephen O. Dean, President (301) 258-0545. (2-22-12)

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