



## "Hot laboratories and remote handling"

### Working Group

24 - 27 September 2012, Marcoule, France

### 2<sup>nd</sup> Announcement and Preliminary Program

#### Scope and topics

The working group 'Hot Laboratories and Remote Handling', set up in 1963, aims at being a global forum for all kinds of nuclear services. The objectives of our yearly meetings are:

- To share know-how on exploitation matters of common infrastructure, such as remote handling techniques, safety features, waste handling, validation and QA.
- To seek solutions for safe, economic national and international transportation, licensing and regulation issues and to promote cooperation and mutual support.
- To discuss the present and future demands of the nuclear industry and to draw strategic conclusions regarding further facility requirements.



The meeting will be divided into the following sessions:

- Wastes in a hot laboratory environment (invited session + round table).
- Post-Irradiation Examinations.
- Infrastructure, refurbishment, transportation, licensing (stress tests post-Fukushima).
- Sample preparation techniques (innovative methods).

Accepted papers will be given 20 minutes for presentation, plus 5 minutes for questions. Detailed information about presentations can be found in the enclosed preliminary program. The poster session will be run in parallel and throughout the meeting. Posters will be on display from Monday to Wednesday in the lobby of the conference room.

Full papers must be submitted in MS Word format (see instructions for the authors) prior to the meeting. PowerPoint presentations must be received no later than at the registration, but preferably earlier.

For authors of papers or posters, an award will be given by the members of the Working Group Committee to the best technical paper and poster presented during the meeting.



AVIGNON – POPES' PALACE

## Preliminary Program

<b>Sunday, September 23, 2012</b>	
19:30-21:30	<p>Welcome drink in Avignon in Restaurant "Les Domaines" at 28 Place de l'Horloge</p> <p style="text-align: center;"><b>ROBATEL Industries</b></p> <p>in Avignon offered by</p>
<b>Monday, September 24, 2012</b>	
7:45	Bus departure from hotels in Avignon to ICSM conference room
8:30-9:00	Registration. Posters should be provided at the registration desk.
9:00-9:20	Opening presentation and welcome, <i>C. Bonnet, Director of Marcoule CEA Centre</i>
<b>Session: Wastes in a hot laboratory environment</b>	
9:20-9:45	Managing the wastes arising from CEA R&D programs, Thierry Advocat, <b>CEA, France.</b>
9:45-10:10	Waste Generated in a Hotlab - A general view, H.-F. Beer, D. Gavillet, <b>PSI, Switzerland.</b>
10:10-10:35	Treatment of high-level waste arising from pyrochemical processes, Lukinykh A. N., Lizin A.A., Lavrinovich Yu.G., Tomilin S.V., Osipenko A.G., Kormilitsyn M.V., <b>SSC RIAR, Russia.</b>
	Coffee break
10:55-11:20	Methods for characterization of radioactive waste and spent nuclear fuel. Results obtained during the validation, M. Mincu, C. Gentea, G. Androne, L. Dinu, C. Lažar & M. Tatarascu, <b>INR, Romania.</b>
11:20-11:45	The impact of transuranics and key fission products on emissions limits & waste declarations, P.D.W. Bottomley, <b>ITU, Germany</b>
11:45-12:10	Actinide Phosphates with NaZr <sub>2</sub> (PO <sub>4</sub> ) <sub>3</sub> Structure. High-Speed Production of Dense Ceramics, Orlova A.I., Lizin A.A., Tomilin S.V., Lukinykh A.N., Kanunov A.E., Chuvil'deev V.N., Boldin M.S., Sakharov N.V., Nokhrin A.V., Lobachevsky <b>State University of Nizhni Novgorod &amp; RIAR, Russia.</b>
12:10-12:35	Conditioning of Pu-containing radioactive waste generated in the Hotlab: implementation of an upgrade, J. Mueth, H.-F. Beer, D. Gavillet, <b>PSI, Switzerland.</b>
	Lunch buffet at ICSM
14:00-14:45	Round table on "wastes in hot laboratories"
14:45-15:30	VISIATOME nuclear museum visit
	Coffee break
<b>Session: Post-Irradiation Examinations</b>	
15:30-15:55	Non-destructive examinations of irradiated fuel rods at the ITU hot cells, D. Papaioan-nou, R. Nasyrow, W. de WEERD and V.V. Rondinella, <b>ITU, Germany.</b>
15:55-16:20	Post-irradiation Examination of High Burnup Advanced Metallic Fuels, Heather J. MacLean Chicester, Douglas L. Porter, Steven L. Hayes, <b>Idaho National Laboratory, USA.</b>
16:20-16:45	Post irradiation studies on mixed oxide fuels, Prerna Mishra, V. P. Jathar, K.M. Pandit, R.S. Shrivastaw, H.N. Singh, G.K. Mallik, K.S. Balakrishnan, J.L. Singh & S. Anantharaman, <b>BARC, India</b>
16:45-17:15	Short presentations of the facilities to be visited on Tuesday (ATALANTE, NUCLAB, ISAI),

	O. Dugne, ..., <b>CEA, France</b>
17:30	Bus transportation from ICSM to hotels
<b>Tuesday, September 25, 2012</b>	
7:45	Bus departure from hotels in Avignon to ICSM conference room
8:45-9:00	Entrance formalities for Marcoule site
9:00-12:00	Visit of ATALANTE, ISAI or NUCLAB facilities in several groups (2 facilities per participant)
	Lunch buffet at ICSM
<b>Session: Post-Irradiation Examinations (continued)</b>	
13:30-13:55	Electron Microscopy for Microstructural Studies on Fast Reactor Structural Materials, C.N. Venkiteswaran, V. Karthik, Divakar Ramachandran <sup>1</sup> , B.K. Ojha, V. V. Jayaraj, C. Padmaprabu, V. Anandraj, P. Visweswaran, Ranvijay Kumar, Shaji Kurien, T. Johny, Jojo Joseph, S. Venugopal & T. Jayakumar, <b>ICGAR, India</b> .
13:55-14:20	Hydrides re-orientation and Metallography Analysis of six cycles irradiated fuel cladding samples, Robert Zubler, Stephane Valance, Andreas Urech, <b>PSI, Switzerland</b>
14:20-14:55	Impact of the Fukushima event on hot cell facilities: The stress test evaluation for the hot cells of SCK•CEN, Martens Benedikt, <b>SCK•CEN, Belgium</b> .
<b>Session: Infrastructure, refurbishment, transportation</b>	
14:55-15:20	A fusion hot cell: the ITER Hot Cell Facility integration status and main challenges, V. Beaudoin, M. Benchikhoun, A. Dammann, A. Gray, S.M. Basha, M. Kotamaki, S. Rosanvallon, <b>ITER Organization, France</b> .
	Coffee break
15:40-16:05	Novel remote handling cells to support nuclear R&D, R. Williamson, <b>NNL, UK</b> .
16:05-16:30	New Hot Cells in project SUSEN, Jan Michalicka, <b>Research Centre Řež, Czech Republic</b>
16:30-16:55	Development and Design Considerations for a Suite of New Post Irradiation Examination Hot Cells to be Constructed at McMaster University, John Luxat, David Novog, Gianluigi Botton, Valerie Walker, Steve Shaw, Glenn Pierce, Greg Sprenger & Michael Wade, <b>McMaster University, Canada &amp; Merrick &amp; Co, USA</b> .
16:55-17:20	Design Status of the Post Irradiation Examination Hot Cells to be Constructed at McMaster University, John Luxat, David Novog, Gianluigi Botton, Valerie Walker, Steve Shaw, Glenn Pierce, Greg Sprenger & Michael Wade, <b>McMaster University, Canada &amp; Merrick &amp; Company, USA</b> .
17:30	Bus transportation from ICSM to hotels
<b>Wednesday, September 26, 2012</b>	
7:45	Bus departure from hotels in Avignon to ICSM conference room
9:00-9:25	Project of investment and settlement of a Tensile test Machine with a high temperature furnace under controlled atmosphere in hot cell M18 of the LECI hotlab facility, C. Vaille, L. Roux, P. Coffre, J.-P. Pizzanelli, <b>CEA, France</b> .
9:25-9:50	A radioisotope production hot cell revamping, D. Sanchette, <b>Robatel Industries, France</b>
9:50-10:15	Construction of semi-hot facility for the PET centre of NRI Řež, R. Kopriva, M. Kytka, <b>NRI, Czech Republic</b> .
10:15-10:40	A dedicated type B cask for decommissioning waste, C. Bruneel, <b>Robatel Industries, France</b> .
	Coffee break
11:00-11:25	Flying pig cask, Arnaud Victorin, Katharina Spann, <b>AREVA, France</b>
<b>Session: Sample preparation techniques – Innovative methods</b>	
11:25-11:50	A Sensorless Virtual Slave Control Scheme for Kinematically Dissimilar Master-Slave Teleoperation, Enrique delSol, Robin Scott, Stephen Sanders, Keith Kershaw, <b>Oxford Technologies Ltd, UK &amp; CERN, Switzerland</b> .
11:50-12:15	Fluence Monitor (F/M) Loaded in a Capsule for Irradiating Materials below 100°C at the HANARO, Bong Goo Kim, Seung Jae Park, Seong Woo Yang & Tae Kyu Kim, <b>KAERI, Korea</b> .
12:15-12:40	Improvement of the center boring device for the irradiated fuel pellets, Takuya Toyokawa, Hidenori Shiina, Koji Usami, Atsushi Onozawa, <b>JAEA, Japan</b>
	Lunch buffet at ICSM
14:10-14:35	IES skills for ultrasonic innovative instrumentation in hot labs, Augereau F., <b>Montpellier</b>

	University, France.
14:35-15:00	A method for the replacement of $^{137}\text{Cs}$ with $^{40}\text{K}$ for open-source ion exchange research applications in hot cells, Andrew J. Parker, Colin Boxall & Malcolm J. Joyce, Lancaster University, UK.
15:00-15:25	In situ measurements of nuclear fuel rod cladding deformation by speckle interferometry, M. Fabert, L. Gallais, Y. Pontillon, Aix-Marseille University, CEA, France.
15:25-15:50	Development of fabrication technique for fatigue test specimen from block-shaped stainless steel in hot cell, Masanari Sugiyama, Makoto Saito, Ryuji Matsuduka, Kazuhiro Chatani, NFD, Japan.
16:15	Bus transportation from ICSM to Avignon
	Popes' Palace visit
	Conference dinner, "Hotel de l'Europe", 12 Place Crillon, in Avignon
<b>Thursday, September 27, 2012</b>	
7:45	Bus departure from hotels in Avignon to Cadarache Nuclear Centre
9:45	Entrance formalities at Cadarache
10:00	Bus tour of the centre
	Jules Horowitz Reactor under construction
	LECA-STAR
	LEFCA
16:00	Bus departure from Cadarache
17:15	Bus arrival at Aix-Marseilles TGV station
17 :30	Bus arrival at Marseilles International Airport
19 :30	Bus arrival at Avignon

## Poster session

Flying pig cask, Arnaud Victorin, Katharina Spann, AREVA, France
Development of a gas trapping system for gaseous fission products throughout dissolution of irradiated targets and fuels in hot cells, Josselin Lanic, CEA, France.
Multipurpose devices dedicated to Hot samples containment and transportation to synchrotron facility, Philippe Valenza, Philippe Martin, Christophe Valot, CEA, France.
Waste Characterization by Laser Induced Breakdown Spectroscopy technology, M. Lemerancier, L. Bonin, V. Muller, J.E. Muller, Ch. Roure, NuLab, AREVA, France.
$^{99}\text{Tc}$ and $^{129}\text{I}$ analysis in radioactive liquid wastes using Quadrupole ICP-MS, L. Cathala, L. Montreuil, L. Bec-Espitalier, NuLab, AREVA, France.
Destruction Process of irradiating organic materials by supercritical way in shielded cell, G. Ballion , T. Le-Goaziou, NuLab, AREVA, France.
Destruction Process of plutonium contaminated resin ion exchange by Ag (II) electrolytic treatment in shielded cell, G. Ballion , T. Le-Goaziou, NuLab, AREVA, France
Evaluation of Plutonium retention in decommissioned glove box by ISOCS treatment, S. Dogny, NuLab AREVA, France.

## Venue

The meeting will take place in Marcoule Nuclear Center, at the ICSM conference building on 24, 25 and 26 September 2012 and will include visits of:

- Visiatome : a nearby nuclear museum,
- Atalante : CEA largest hot laboratory devoted to fuel cycle and reprocessing studies,
- NUCLAB Analytical Laboratory, a joint CEA-AREVA facility.
- ISAI : a large hot cell for reconditioning of spent fuel (from Phénix reactor).

On Thursday 27 September, an optional visit will be organized to the CEA Cadarache Nuclear Centre, including visits of LECA-STAR and LEFCA hot laboratories, Jules Horowitz Reactor construction site and tour of the centre.

Admittance to CEA facilities will only be granted if pre-registration and Entry Check forms have been completed and returned before 01 July 2012.

CEA Marcoule is ready to provide an invitation letter if a visa is needed.

## Accommodation

In terms of accommodation you can choose the following hotels in Avignon. For more information on Avignon tourism, you can visit: <http://www.ot-avignon.fr>

Preferably, choose the hostels in Avignon, easier to take the shuttle for Marcoule.

Avignon					
Nom	Classification	Adresse	Tarifs	Tel/fax	Site Web
Hotel de l'Europe	****	12, place crillon	Chambres: 175 à 480€; Suites 655 à 820€	Tel:04.90.14.76.76 Fax: 04.90.14.76.71	<a href="http://www.hotel-d-europe.fr">www.hotel-d-europe.fr</a>
Hotel La Mirande	****	Place Amirande	Chambres: 310 à 540€; Suites 430 à 1240€	Tel:04.90.14.20.20 Fax: 04.90.86.26.85	<a href="http://www.la-mirande.fr">www.la-mirande.fr</a>
Hotel Cloître St Louis	****	Portail Boquier	Chambres: 175 à 336€;	Tel:04.90.27.55.55 Fax: 04.90.82.24.01	<a href="http://www.cloitre-saint-louis.com">www.cloitre-saint-louis.com</a>
Grand Hotel	****	Boulevard St Roch (Remparts)	Chambres: 200 à 300€	Tel:04.90.80.98.09 Fax: 04.90.80.98.10	<a href="http://www.avignon-grand-hotel.com">www.avignon-grand-hotel.com</a>
Hotel de l'Horloge	***	Place de l'horloge	Chambres: 85 à 200€	Tel:04.90.16.42.00 Fax: 04.90.82.17.32	<a href="http://www.hotel-avignon-horloge.com">www.hotel-avignon-horloge.com</a>
Mercure Pont d'Avignon	***	Rue ferruce/Balance	Chambres: 100 à 190€	Tel:04.90.80.93.93 Fax: 04.90.80.93.94	<a href="http://www.accorhotels.com">www.accorhotels.com</a>
Mercure Cité des Papes	***	1, rue Jean Vilar	Chambres: 120 à 250€	Tel:04.90.80.93.00 Fax: 04.90.80.93.01	<a href="http://www.accorhotels.com">www.accorhotels.com</a>
Hotel Bristol	***	44, cours Jean Jaurés	Chambres: 90€ à 200€	Tél : 04 90 16 48 48 Fax : 04 90 86 22 72	<a href="http://www.bristol-hotel-avignon.com">www.bristol-hotel-avignon.com</a>
Hotel d'Angleterre	**	29, boulevard Raspail	Chambres: 75 à 90 €	Tél: 04.90.86.34.31 Fax: 04.90.86.86.74	<a href="http://www.hoteldangleterre.fr">www.hoteldangleterre.fr</a>
Hotel de Blauvac	**	11, rue Bancasse	Chambres: 60 à 110€	Tél: 04.90.86.34.11 Fax: 04.90.86.27.41	<a href="http://www.hotel-blauvac.com">www.hotel-blauvac.com</a>
Hotel Regina	**	6, rue de la République	Chambres: 48 à 90€	Tél: 04.90.86.49.45 Fax: 04.90.86.49.78	<a href="http://www.regina-hotel-avignon.com">www.regina-hotel-avignon.com</a>
Hotel Le Palais des Papes	**	3 place du palais	Chambres: 50 à 150€	Tél: 04.90.86.04.13 Fax: 04.90.27.91.17	<a href="http://www.hotel-avignon.com">www.hotel-avignon.com</a>
Hotel Kyriad	**	26, place de l'Horloge	Chambres: 60 à 100€	Tél: 04.90.82.21.45 Fax: 04.90.82.90.92	<a href="http://www.kyriad-avignon-palais-des-papes.fr">www.kyriad-avignon-palais-des-papes.fr</a>
Etap Hotel	NC	8, boulevard St Dominique	Chambres: 40 à 60€	Tél: 08.92.68.07.24 Fax: 04.90.86.27.19	<a href="http://www.etaphotel.com">www.etaphotel.com</a>
Ibis Centre Gare	NC	42, Boulevard St roch	Chambres: 63 à 93€	Tel:04.90.85.38.38 Fax: 04.90.86.44.81	<a href="http://www.accorhotels.com">www.accorhotels.com</a>
Ibis Pont de l'Europe	NC	12 Boulevard St Dominique	Chambres: 64 à 85€	Tel: 04.90.82.00.00	<a href="http://www.accorhotels.com">www.accorhotels.com</a>

The shuttle for Marcoule will be stationed at "Ferruce Parking", near the Pont d'Avignon (Saint-Bénézet). To view their location, please, see the attached plan at the end of this document.

## Registration fee

The registration fee of **€ 300** covers transportation from and to hotels in Avignon, welcome drink, attendance to all workshop sessions, coffee breaks, lunches and the workshop dinner, technical visits to CEA laboratories and workshop proceedings on a CD-ROM. Transportation and lunch for the optional day in Cadarache is included.

Without the optional day, the registration fee is reduced to **€ 250**.

Registration fee, please pay by bank transfer with the following details:

### For participants (outside CEA):

- By Bank transfer to BNP Paribas – Paris, Agence Centrale Entreprises, 1, Bd Haussmann, BP 281, 75425 PARIS CEDEX 09, France.  
RIB: 30004 00818 00021216221 27  
IBAN: FR76 3000 4008 1800 0212 1622 127  
SWIFT: BNPAFRPPVD
- Or by check ordered to C.E.A.
- Address: CEA-Marcoule, DEN/MAR/SFCG/BCF, Andrée Doublet,
- BP17171, 30207 BAGNOLS SUR CEZE, FRANCE
- Please specify HOTLAB 2012 and the name of participants.

**For CEA agents only :** par “virement interne” pour les agents DEN, par “cession interne” pour les agents hors DEN, en précisant le nom du ou des participants, le Centre de Coût C5F01F04 et l’Ordre Statistique : LOC5F0HOTLAB.

Papers and powerpoint presentation should be submitted electronically along with the registration form for **the deadline of 31 July 2012** to the following e-mail: [communication-marcoule@cea.fr](mailto:communication-marcoule@cea.fr)

## Key dates

**31 July 2012** - Registration deadline

**05 September 2012** - Submission of full paper deadline

## Organizing Committee

Jean-Yves Blanc (CEA), Ann Leenaers (SCK•CEN)

Sylvain Grignon (CEA Marcoule), Mariette Ferrier (CEA Marcoule).

Thank you to find the following links for Marcoule <http://www-marcoule.cea.fr/home/liblocal/docs/UCAP/PORTAIL/Plan%20d'accès%20Marcoule.pdf>

And Hotlab <http://hotlab.sckcen.be/>



# AVIGNON TOURISME

PLAN DE VILLE  
CITY MAP  
STADTPLAN  
PIANTA DELLA CITTÀ  
PLANO DE LA CIUDAD  
2009

avignon intramuros



### TOURISME - TOURISM - INFORMAZIONI

- 1 Office de tourisme E7
- Annexe Espace Ferruce E2

### SERVICES - SERVICES - SERVIZI

- 2 Gare SNCF Centre E8
- 3 Gare routière F8
- 4 Hôtel de ville E4
- 5 Poste principale D8
- 6 Bureau du festival D7
- 7 Opéra E4
- 8 Centre des congrès E3
- 9 Préfecture D5 et J5
- 10 Conseil Général E5
- 11 Cité Administrative E8
- 12 Chambre Commerce E8
- 13 Chambre de Métiers D5
- 14 Police B8 J3
- 15 Gendarmerie C7
- 16 Palais de Justice I7
- 17 Université J4
- 18 Maison des Vins F6
- 19 Navette Gare-TGV E8

### MONUMENTS ET MUSÉES - MUSEUMS AND MONUMENTS - MUSEEN UND MONUMENTE - MUSEI E MONUMENTI - MUSEOS Y MONUMENTOS

- M1 Palais des Papes E4
- M2 Pont Saint-Bénézet E2
- M3 Musée du Petit Palais E3
- M4 Musée Calvet D6
- M5 Musée Lapidaire E6
- M6 Collection Y. Lambert D7
- M7 Musée Angladon E6
- M8 Musée Voulard C6
- M9 Musée Requien D6
- M10 Archives municipales
- Musée Mont de Piété G4
- M11 Palais du Roure E5
- M12 Maison Jean Vilar E4
- M13 Archives départementales E3
- M14 Bibliothèque Ceccano E6
- M15 Conservatoire G5

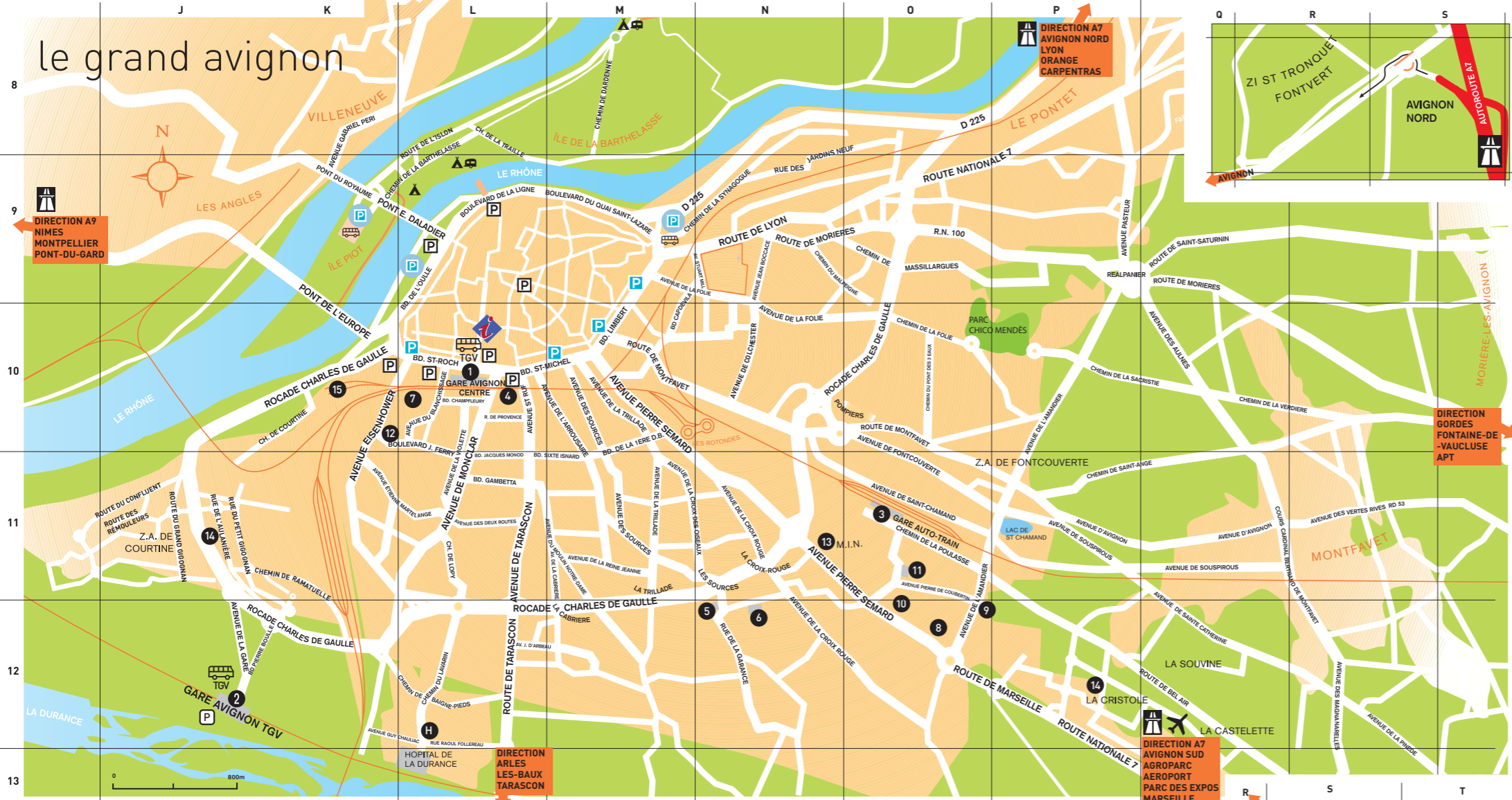
### ÉGLISES - CHURCHES - KIRCHEN - CHIESE IGLESIAS

- Cath. Notre-Dame des Doms E3
- Eglise Saint Pierre F4
- Eglise Saint Didier E6
- Eglise Saint Agricole D5
- Eglise Saint Symphorien H4
- Synagogue F5
- Temple saint Martial E7

- ZONE PIÉTONNE - PEDESTRIAN ZONE - FUSSGÄNGERZONE ZONA PEDONALE - ZONA PEATONAL
- POINT DE VUE - SPLENDID VIEW HERRLICHE AUSSICHT PANORAMA - VISTA PANORAMICA
- PARKING - CAR PARK PARKPLATZ - PARCHEGGIO
- PARKING AUTOCARS - BUS PARK PARKPLATZ - PARCHEGGIO
- PARKING GRATUIT - FREE CAR PARK FREIER PARKPLATZ - PARCHEGGIO GRATIS - PARKING GRATUITO
- NAVETTE GRATUITE - FREE SHUTTLE BUS - KOSTENLOSER PENDELBUS - BUS NAVETTA GRATUITO - ENLACE AUTOBUS GRATIS
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- PATRIMOINE MONDIAL DE L'UNESCO - UNESCO'S HERITAGE FOR HUMANITY - WELTKULTURERBE UNESCO PATRIMONIO MONDIALE DELL'UNESCO PATRIMONIO MUNDIAL DE LA UNESCO



# le grand avignon



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Depuis 700 ans  
Avignon accueille  
des hôtes venus  
du monde entier.  
Soyez les bienvenus  
en 2009

**Office de tourisme**  
Office de tourisme \*\*\*\*  
41, cours Jean Jaurès BP8  
84004 Avignon cedex 1 - France  
tél. +33 (0)4 32 74 32 74  
fax +33 (0)4 90 82 95 03  
information@ot-avignon.fr  
www.avignon-tourisme.com

**D'AVRIL À OCTOBRE**  
Du lundi au samedi  
9h-18h  
(en juillet : 9h-19h)  
Dimanche et jours fériés  
9h45-17h

**DE NOVEMBRE À MARS**  
Du lundi au vendredi  
9h-18h  
Samedi 9h-17h  
Dimanche 10h-12h  
Fermé 25/12 et 1/1

**ESPACE FERRUCE**  
• Accueil touristique ouvert de Pâques à Octobre à proximité du Pont Saint Bénézet.  
• Tourist information center open from Easter to October at the Avignon Bridge.  
• Tourismus-Information an der St.Bénézet-Brücke in der Saison geöffnet Ostern bis Oktober.  
• Accoglienza turistica aperta in stagione nei pressi del Ponte Saint Bénézet. Apertura de Pasqua a fine ottobre.  
• Centro de información turística abierto en temporada cerca del puente Saint Bénézet. Abierto de Pascua a finales de octubre.

- |                               |                                     |
|-------------------------------|-------------------------------------|
| 1 Gare Avignon Centre L10     | 10 Piscine Municipale 012           |
| 2 Gare Avignon TGV J12        | 11 Bowling 011                      |
| 3 Auto-Train 011              | 12 Service Municipal des Sports K10 |
| 4 Gare routière L10           | 13 Marché d'intérêt National N11    |
| 5 Sécurité sociale URSSAF N12 | 14 Zones Industrielles P12 et J11   |
| 6 Pôle Emploi N12             | 15 Sernam K10                       |
| 7 Champfleury L10             | H Hôpital de la Durance L13         |
| 8 Parc des Sports 012         | A Aéroport S15                      |
| 9 Patinoire 012               | TGV Navette GareTGV - centre ville  |

